Supplement to

Short flashes and continuous light have similar photoinhibitory efficiency in intact leaves

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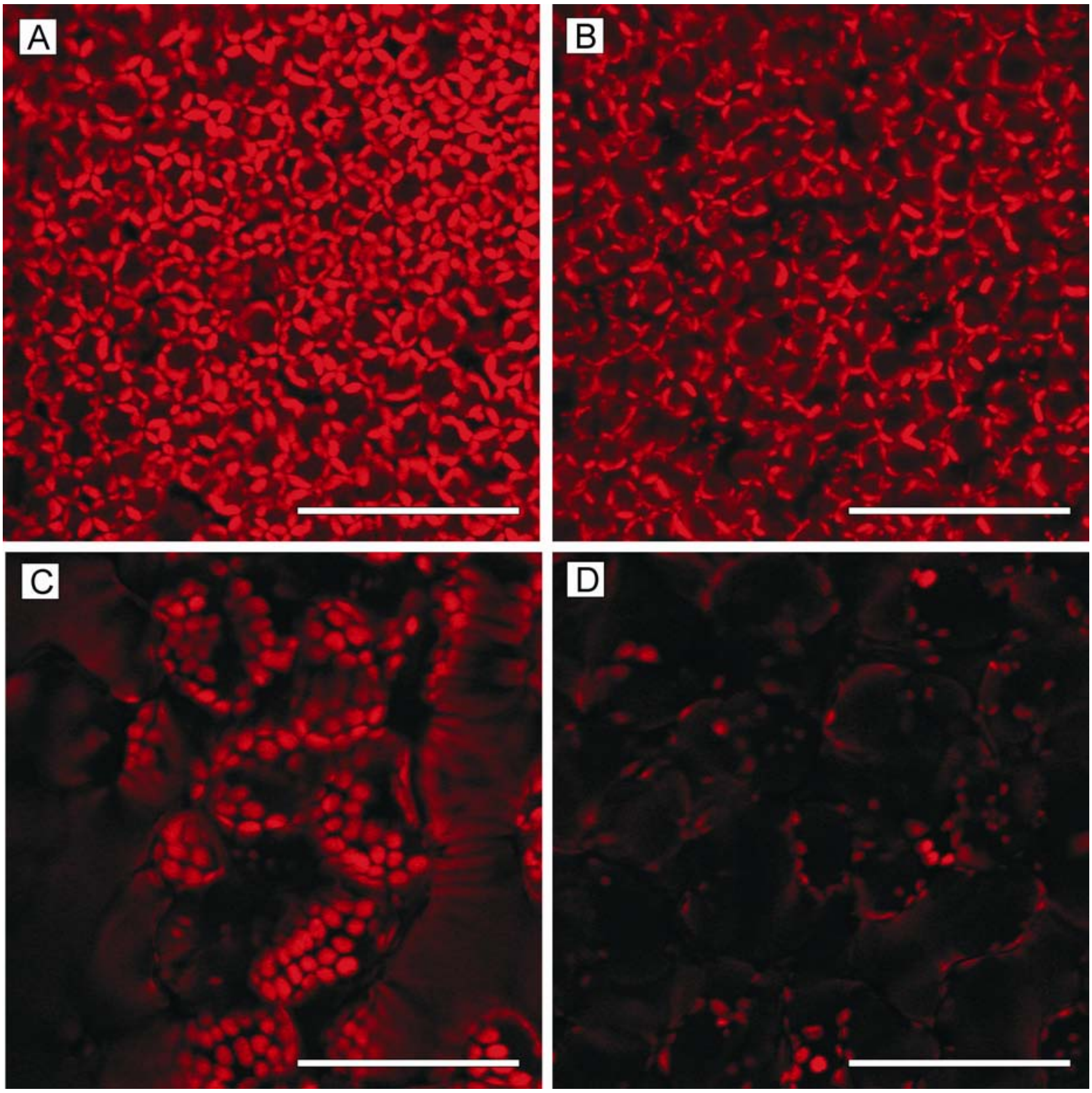

Fig. S1. Confocal images from the uppermost cell layer of a pumpkin (A, B) and Arabidopsis (C, D) leaf before (A, C) and after (B, D) 30-min illumination with continuous light, PPFD 1350 µmol $m^{-2}s^{-1}$. Before the high-light treatment, the leaves were kept for 1 h at the PPFD of 20 µmol $m^{-2}s^{-1}$. The scale bar indicates 100 µm.

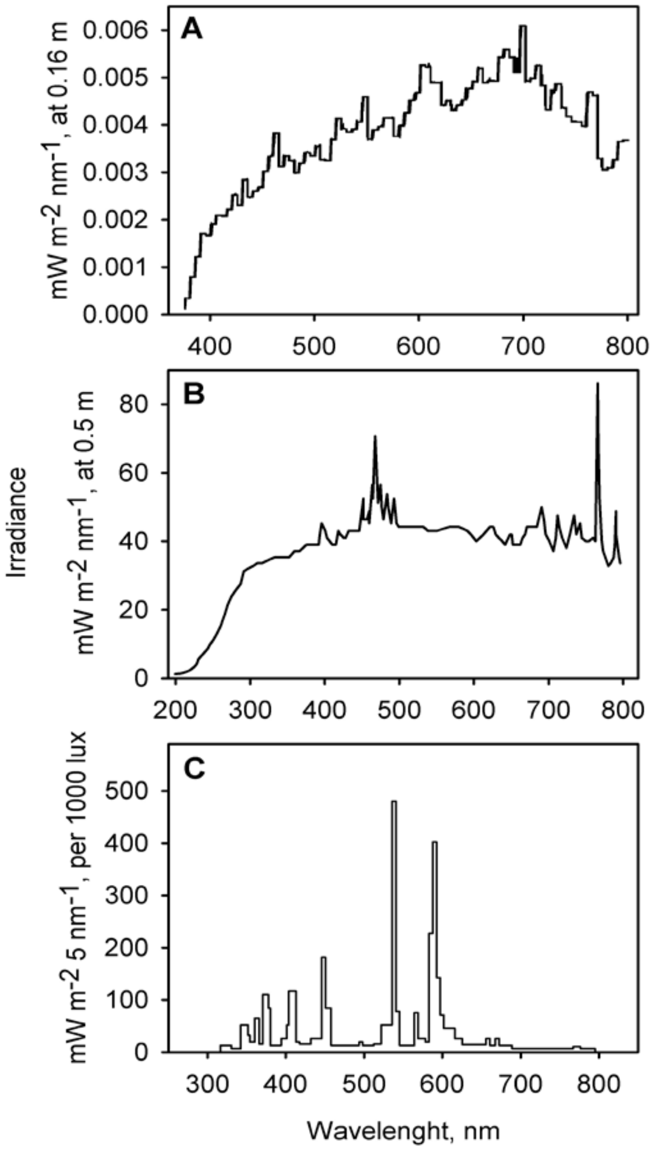

Fig. S2. The emission spectrum of the FX-200 Xenon flash lamp (EG&G), measured through a Schott GG400 filter (A), spectrum of the continuous-light Xenon lamp (Oriel Instruments) (B) and spectrum of the Philips HPI-T Plus lamp (C). The Xenon flash lamp was measured by Solar Simulator Finland Ltd and the data for the continuous-light lamps were provided by the manufacturers. A GG400 filter was routinely used to block the UV emission of the continuous-light Xenon lamp.

Table S1. Photochemical quenching, measured from pumpkin leaves during illumination with Xenon flashes. The leaf was illuminated from 1 cm distance with the flash lamp and fluorescence was simultaneously measured with the PAM-2000 fluorometer. After illumination of 1 min (flash rates 10-30 fps) or 5 min (1 fps) a saturating pulse (PPFD 4500 μmol m^{-2} s^{-1}, 0.8 s) was fired, the flashing was switched off and F_0' was measured using a 2 s pulse of far-red light. The values show the mean and SD of three independent experiments.

Flash energy, J	Flash rate, fps	qP
0.1	30	0.98±0.02
0.6	20	0.99±0.01
1.35	10	0.98±0.02
13.5	1	0.99±0.01

Table S2. Pearson correlation (r) between k_{PI} and the energy of the flashes (E), and between k_{PI} and the time interval between the flashes (Int). The p value is the probability that the correlation is a coincidence. The correlations were calculated separately for k_{PI} values calculated either from oxygen evolution or from F_V/F_M. First, the correlation coefficients were calculated for all data, then for subsets of data in which either the flash energy was constant (1.3, 3.4 or 13.5 J), and for subsets in which the interval was constant (1, 9 or 90 s). In all cases, the k_{PI} values were calculated per flash.

k_{PI} calc. from		All data	All data	E= 1.3 J	E= 3.4 J	E= 13.5 J	Int= 1 s	Int= 9 s	Int= 90 s
		k_{PI} vs E	k_{PI} vs Int	k_{PI} vs Int	k_{PI} vs Int	k_{PI} vs Int	k_{PI} vs E	k_{PI} vs E	k_{PI} vs E
O_2 evol.	r	0.822	0.173	0.254	-0.122	0.494	0.823	0.891	0.864
	p	<0.001	0.162	0.254	0.737	0.014	<0.001	<0.001	<0.001
F_V/F_M	r	0.822	-0.006	0.360	-0.317	-0.096	0.891	0.811	0.779
	p	<0.001	0.961	0.091	0.444	0.664	<0.001	<0.001	<0.001