

**Table S1.** Summary of parameters and statistical result of the electron transport rate (ETR)-light response curves based on the Equation (5).

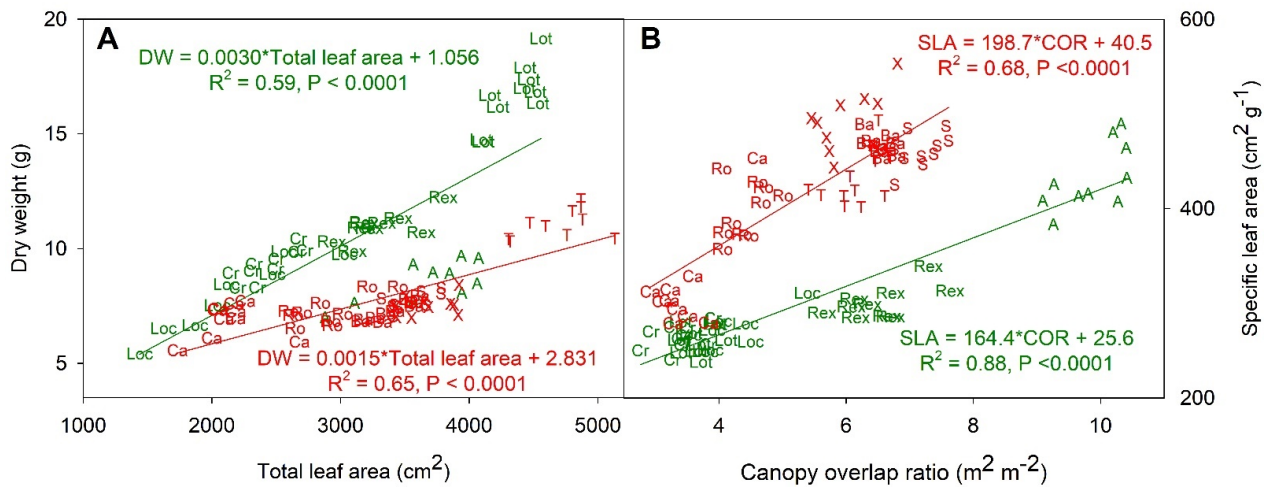
Cultivars	a	b	c	d	R <sup>2</sup>	<i>p</i> -value
<b>Aquino</b>	3.6	20.1	1.7	321.5	0.98	< 0.001
<b>Crunchita</b>	2.6	13.8	2.2	131.3	0.96	< 0.001
<b>Rex</b>	2.4	12.4	2.7	110.2	0.99	< 0.001
<b>Locarno</b>	3.3	18.4	1.9	228.2	0.97	< 0.001
<b>Lotus</b>	4.3	27.7	1.2e5	2.8e8	0.97	< 0.001
<b>Barlach</b>	3.9	22.6	32.8	1.6e4	0.97	< 0.001
<b>Carmessi</b>	3.3	18.1	2.7	396.4	0.99	< 0.001
<b>Rouxai</b>	3.5	19.9	2.6	476.8	0.98	< 0.001
<b>Seurat</b>	2.6	14.5	2.6	131.3	0.99	< 0.001
<b>Tedore</b>	2.7	14.6	2.6	154.0	0.99	< 0.001
<b>Xandra</b>	3.4	19.6	2.4	326.6	0.99	< 0.001

**Table S2.** Calculated electron transport rate (ETR) at *PPFD*s of 200 and 1000  $\mu\text{mol m}^{-2} \text{s}^{-1}$  based on the ETR light response curves of each plant.

Cultivars	Calculated ETR at <i>PPFD</i> of 200 ( $\mu\text{mol m}^{-2} \text{s}^{-1}$ )	Calculated ETR at <i>PPFD</i> of 1000 ( $\mu\text{mol m}^{-2} \text{s}^{-1}$ )
<b>Aquino</b>	49.8	121.3
<b>Crunchita</b>	45.4	97.5
<b>Rex</b>	53.0	117.7
<b>Locarno</b>	49.7	120.7
<b>Lotus</b>	46.6	98.4
<b>Barlach</b>	51.0	315.4
<b>Carmessi</b>	51.1	175.2
<b>Rouxai</b>	52.0	181.2
<b>Seurat</b>	56.2	133.9
<b>Tedore</b>	52.9	134.4
<b>Xandra</b>	56.5	175.6



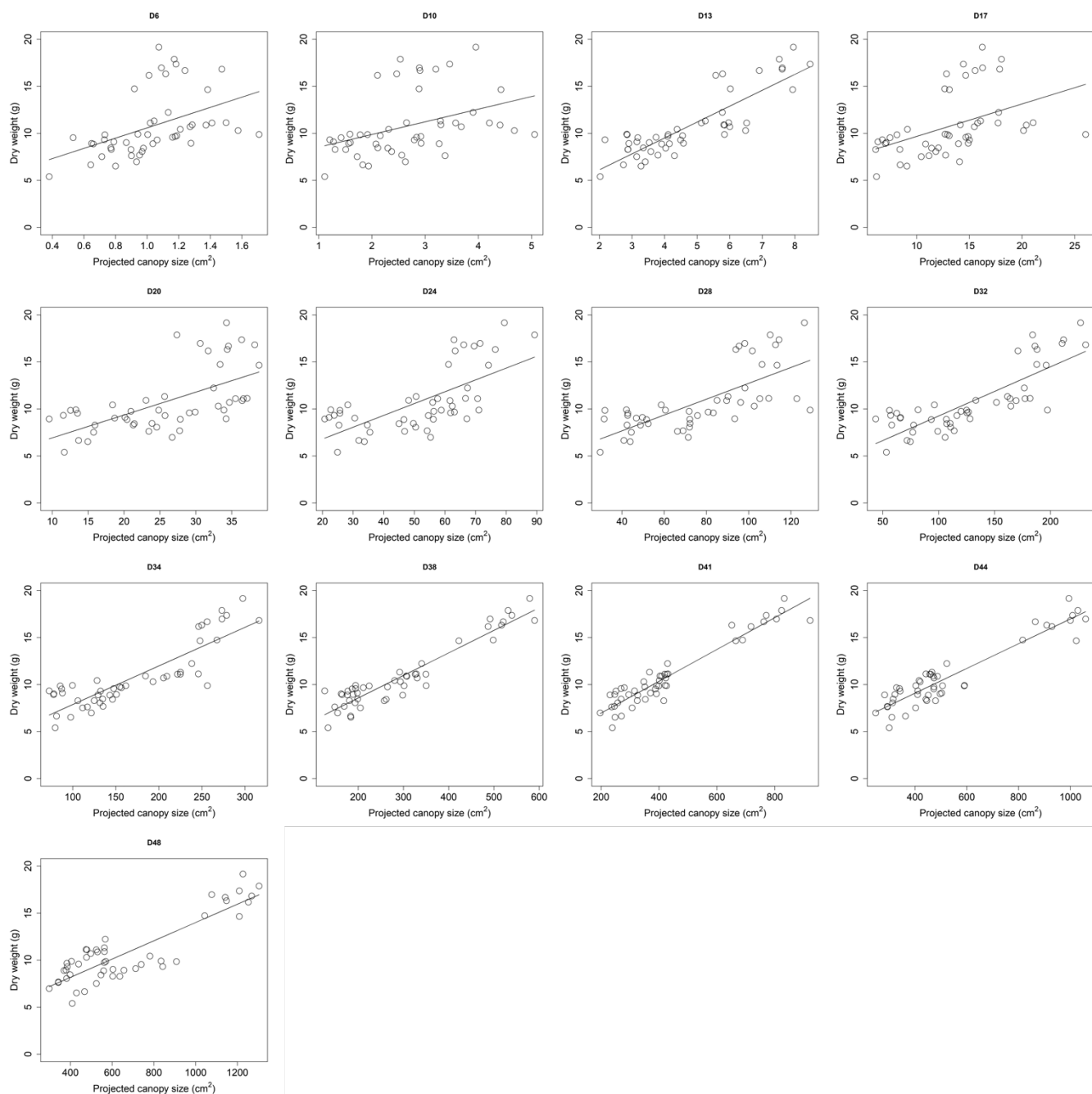
**Figure S1.** Comparison between the (left) RGB and (right) chlorophyll fluorescence images of lettuce leaves with different anthocyanin content. CFI easily separates plant objects and background regardless of anthocyanin content, making it an ideal method for determining projected canopy size.



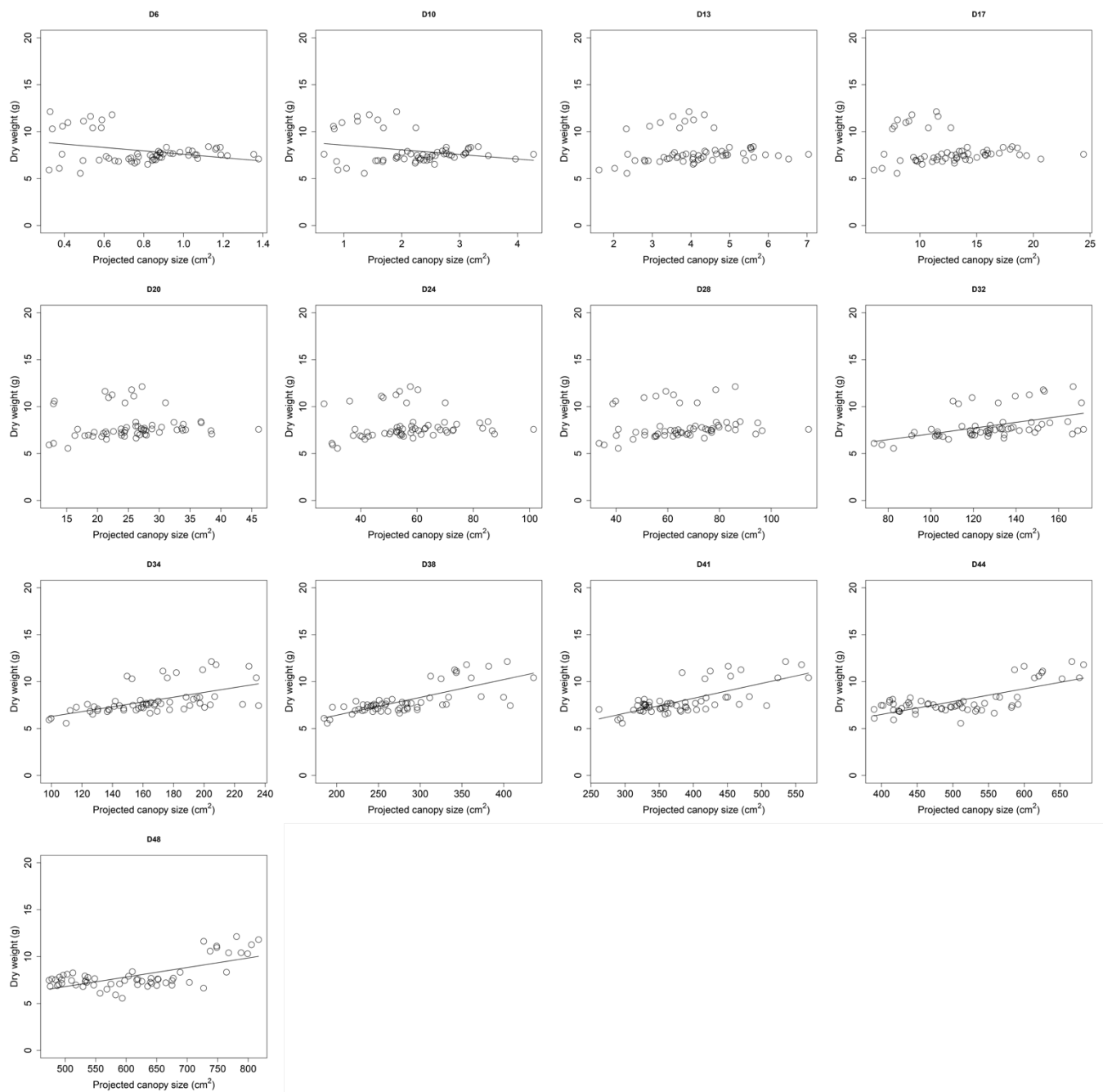
**Figure S2.** The correlation between dry weight (DW) and total leaf area (A) and specific leaf area (SLA) and canopy overlap ratio (COR) (B) in the green and red cultivars. Letters and their colors in the figures are corresponding to name of cultivars ('Aquino' (A), 'Barlach' (Ba), 'Carmessi' (Ca), 'Crunchita' (Cr), 'Locarno' (Loc), 'Lotus' (Lot), 'Rex' (Rex), 'Rouxai' (Ro), 'Seurat' (S), 'Teodore' (T), and 'Xandra' (X)) and red- and green leaf lettuce cultivars. Summary of the regression analyses are adjacent to the regression lines.



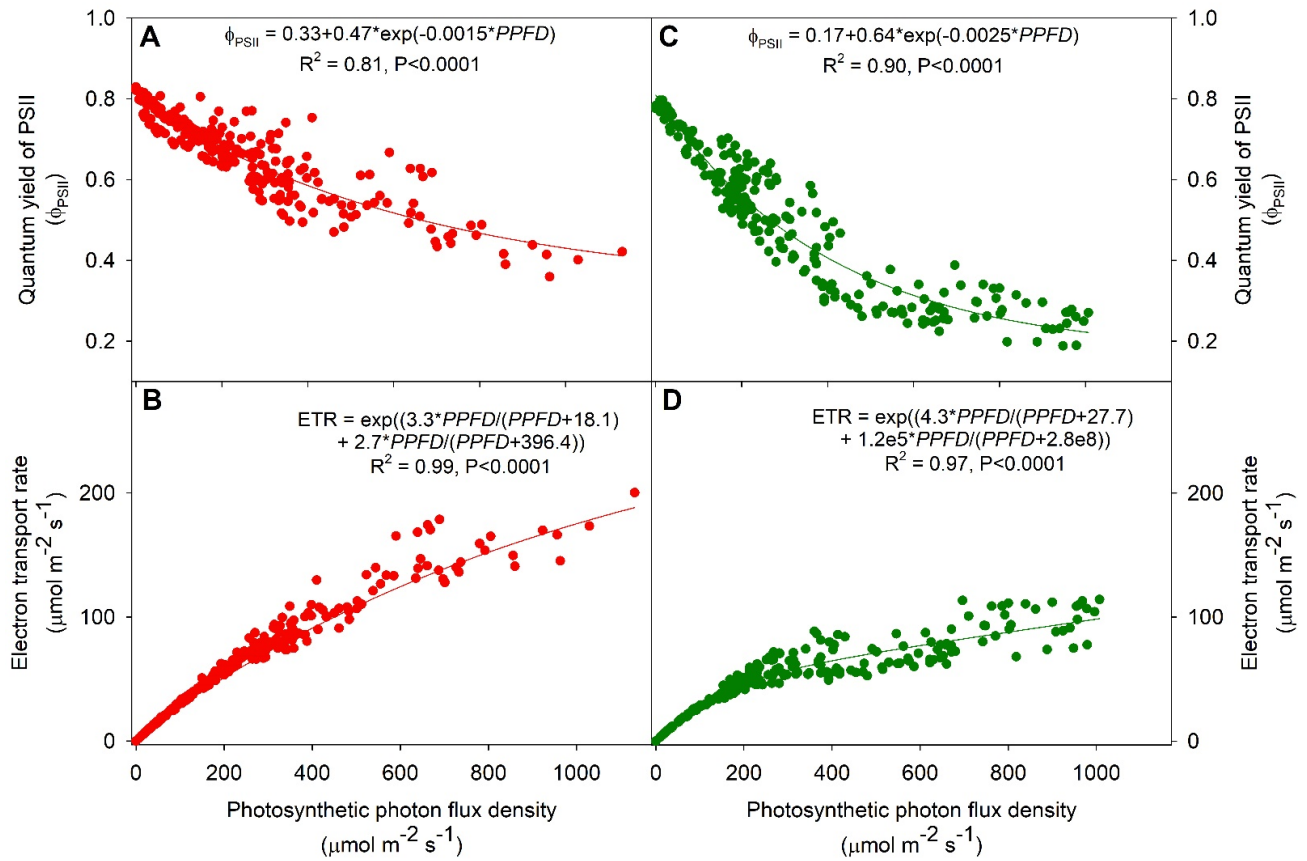
**Figure S3.** Changes in projected canopy size in 'Rex' lettuce, as determined from chlorophyll fluorescence images throughout the cropping cycle. The numbers below the plant represent the number of days after germination when the image was taken.



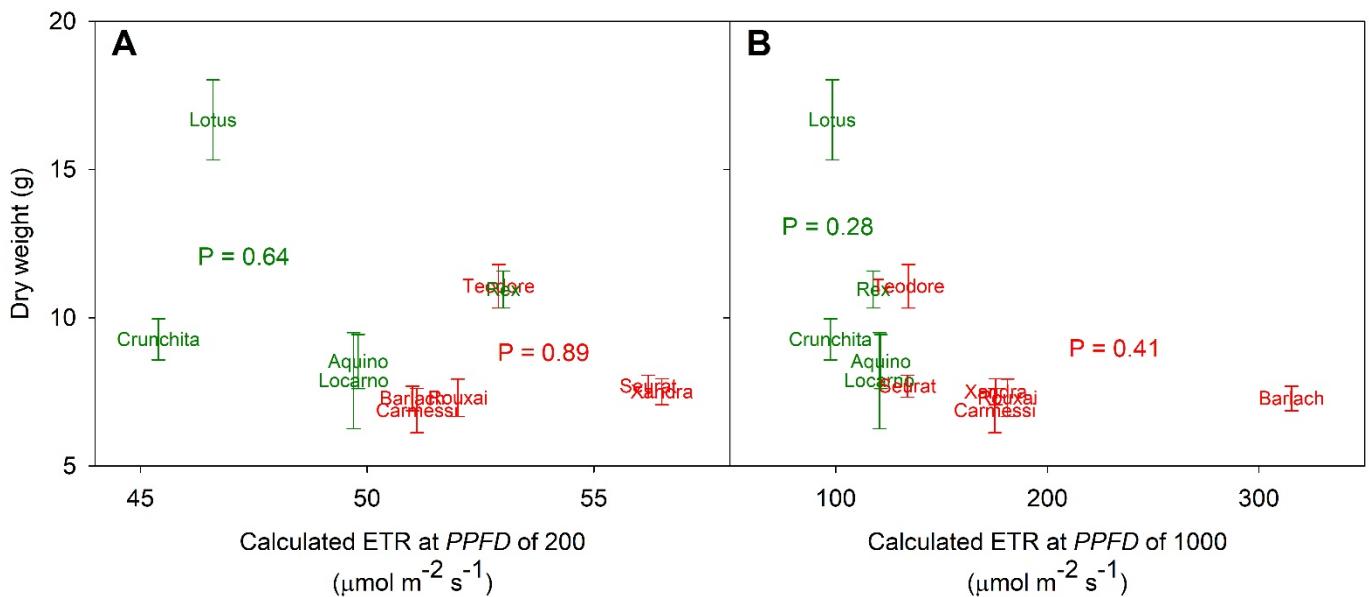
**Figure S4.** The correlation between projected canopy size (PCS) throughout the cropping cycle and dry weight (DW) of the green cultivars. Title of each plot represents each day after germination when PCS was measured.



**Figure S5.** The correlation between projected canopy size (PCS) throughout the cropping cycle and dry weight (DW) in the red cultivars. Title of each plot represents each day after germination when chlorophyll fluorescence images were taken to measure PCS.



**Figure S6.** Light response curves of quantum yield of photosystem II ( $\Phi_{PSII}$ ) (A and C) and electron transport rate (ETR) (B and D). The light response curves were obtained from diurnal measurements of a minimum of three plants per cultivar, collected from 30 to 48 days after germination. Red- and green-colored dots and lines are from 'Carmess' and 'Lotus' cultivars, respectively. Summary of non-linear regression model is presented in each plot.



**Figure S7.** The result of regression analysis between the dry weight and the calculated electron transport rate (ETR) at PPFDs of 200 (A) and 1000 (B)  $\mu\text{mol m}^{-2} \text{s}^{-1}$ , based on data collected from 30 to 48 days after germination. Lettering shows means of each cultivar and error bars (standard deviation,  $n = 10$ ). Colors of letters on the figures represent red and green lettuce cultivars. P-values are presented, but none of the correlations are significant. .