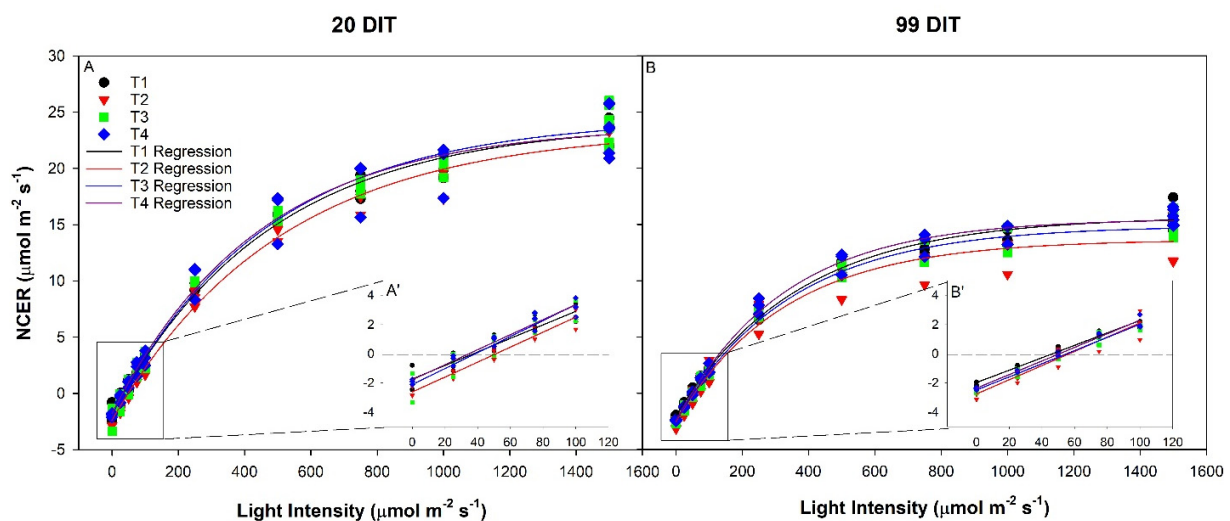


## Supplementary Figures

**Supplementary Figure 1:** Photosynthetic light response curves of mini-cucumber leaves grown under either T1, T2, T3, or T4 at 20 (Panel A) or 99 DIT (Panel B) as determined using a Li-COR 6400 with a red/blue standard Li-COR light source. T1 (control) was 16h of red light ( $149\pm 6 \mu\text{mol m}^{-2} \text{s}^{-1}$ ; 06:00-22:00) and blue light ( $25\pm 1 \mu\text{mol m}^{-2} \text{s}^{-1}$ ; 06:00-22:00) followed by 8h of darkness (22:00-06:00). T2 was a continuous (24h) of red light ( $96\pm 3 \mu\text{mol m}^{-2} \text{s}^{-1}$ ) and blue light ( $17\pm 1 \mu\text{mol m}^{-2} \text{s}^{-1}$ ). T3 was 16h of red light ( $151\pm 4 \mu\text{mol m}^{-2} \text{s}^{-1}$ ; 06:00-22:00) followed by 8h of blue light ( $40\pm 3 \mu\text{mol m}^{-2} \text{s}^{-1}$ ; 22:00-06:00). T4 was 12h of red light ( $210\pm 3 \mu\text{mol m}^{-2} \text{s}^{-1}$ ; 06:00-18:00) followed by 12h of blue light ( $31\pm 2 \mu\text{mol m}^{-2} \text{s}^{-1}$ ; 18:00-06:00). Measurements were made at a  $\text{CO}_2$  level of  $1000 \mu\text{L L}^{-1}$ , leaf temperature of  $25^\circ\text{C}$ , and relative humidity of 60-70%. Regressions lines were fit to  $y=y_0+a(1-e^{-b*x})$  for each lighting treatment. Inserts A' and B' are magnification of 0-100  $\mu\text{mol m}^{-2} \text{s}^{-1}$  PAR regions fit to the regression line  $y=mx+b$ .



**Supplementary Figure 2:** Photosynthetic  $\text{CO}_2$  response curves of leaves grown under either T1, T2, T3, or T4 at 19 or 96 DIT as determined using a Li-COR 6400 with a red/blue standard Li-COR light source. T1 (control) was 16h of red light ( $149\pm 6 \mu\text{mol m}^{-2} \text{s}^{-1}$ ; 06:00-22:00) and blue light ( $25\pm 1 \mu\text{mol m}^{-2} \text{s}^{-1}$ ; 06:00-22:00) followed by 8h of darkness (22:00-06:00). T2 was a continuous (24h) of red light ( $96\pm 3 \mu\text{mol m}^{-2} \text{s}^{-1}$ ) and blue light ( $17\pm 1 \mu\text{mol m}^{-2} \text{s}^{-1}$ ). T3 was 16h of red light ( $151\pm 4 \mu\text{mol m}^{-2} \text{s}^{-1}$ ; 06:00-22:00) followed by 8h of blue light ( $40\pm 3 \mu\text{mol m}^{-2} \text{s}^{-1}$ ;

22:00-06:00). T4 was 12h of red light ( $210 \pm 3 \mu\text{mol m}^{-2} \text{s}^{-1}$ ; 06:00-18:00) followed by 12h of blue light ( $31 \pm 2 \mu\text{mol m}^{-2} \text{s}^{-1}$ ; 18:00-06:00). Measurements were made at a light level of  $1000 \mu\text{mol m}^{-2} \text{s}^{-1}$ , temperature of  $25^\circ\text{C}$ , and relative humidity of 60-70%. Rubisco and RuBP limited fit lines were determined using temperature corrections from McMurtrie and Wang (1993) and Bernacchi et al., (2001).

