

Supplementary Material

Supplementary Tables

Table 1. Stomatal conductance (g_s) measured with the porometer per genotype and experiment. The average g_s ($n = 9$) as well as the ratio of g_s in LED to HPS light is displayed. A significance of the difference between the light treatment groups HPS and LED is shown according to the p -value of a t-test: * p -value < 0.05 , ** p -value < 0.01 , *** p -value < 0.001 .

| Genotype | Exp. | Stomatal conductance (gs) in HPS | Stomatal conductance (gs) in LED | ratio LED/HPS | Significance |
|---------------------|------------|---|-------------------------------------|------------------|--------------|
| | (I- IV) | (mol H ₂ O m ⁻² s ⁻¹) | | | |
| Ailsa Craig | I | 271.1 | 360.9 | 1.33 | *** |
| Ailsa Craig | II | 352.2 | 446 | 1.27 | ** |
| Ailsa Craig | III | 571.4 | 658.5 | 1.15 | *** |
| Ailsa Craig | IV | 560 | 595.6 | 1.06 | . |
| Kentucky Beefsteack | I | 280.6 | 298.6 | 1.06 | . |
| Kentucky Beefsteack | II | 353.9 | 411.9 | 1.16 | . |
| Kentucky Beefsteack | III | 587.6 | 669.6 | 1.14 | ** |
| Kentucky Beefsteack | IV | 592 | 640.5 | 1.08 | . |
| LA1578 | II | 395.6 | 326.1 | 0.82 | . |
| LA1579 | III | 709.3 | 758.5 | 1.07 | . |
| LA1580 | IV | 675.5 | 637.7 | 0.94 | . |
| Momotaro | I | 356.7 | 354.6 | 0.99 | . |
| Momotaro | II | 422.3 | 360.3 | 0.85 | ** |
| Momotaro | III | 549.6 | 694.2 | 1.26 | *** |
| Momotaro | IV | 506.2 | 605 | 1.2 | * |
| Moneymaker | I | 369 | 349.7 | 0.95 | . |
| Moneymaker | II | 372.9 | 449.2 | 1.2 | * |
| Moneymaker | III | 572.8 | 645.6 | 1.13 | ** |
| Moneymaker | IV | 490.7 | 581.2 | 1.18 | . |
| Nunhems-FM001 | I | 393 | 375.3 | 0.95 | . |
| Nunhems-FM002 | II | 388.8 | 425.9 | 1.1 | . |
| Nunhems-FM003 | III | 575.7 | 616.1 | 1.07 | . |
| Nunhems-FM004 | IV | 606.7 | 631.2 | 1.04 | . |
| Rutgers | I | 277.5 | 354.9 | 1.28 | ** |
| Rutgers | II | 339.2 | 375.3 | 1.11 | . |
| Rutgers | III | 546.8 | 574.6 | 1.05 | . |
| Rutgers | IV | 463.5 | 531.8 | 1.15 | . |

Table 2. Average stomatal conductance and transpiration rate (measured with LI-6400 XT) in seven tomato genotypes grown under HPS and LED supplemental light, during the third and fourth Expt. ($n = 21$) and different genotypes ($n = 3$). An ANOVA was done to determine the overall effect of the treatment or genotypes on the stomatal density. Significance: ***, **, and * for $p \leq 0.001$, $p \leq 0.01$, and $p \leq 0.05$, respectively; NS—not significant. Per genotype and between the treatments, a post hoc test was performed and the significant different groups are indicated by letter. Identical letters in the same column indicate that means are not significantly different ($p > 0.05$).

| | Stomatal conductance (molH ₂ O m ⁻² s ⁻¹) | | Transpiration rate (mmolH ₂ O m ⁻² s ⁻¹) | |
|------------------------|---|---------|--|---------|
| | Expt. 3 | Expt. 4 | Expt. 3 | Expt. 4 |
| Treatments (SL) | | | | |
| HPS | 0.61 b | 0.77 b | 3.12 b | 5.46 b |
| LED | 0.74 a | 0.87 a | 4.13 a | 5.57 a |
| Genotypes (G) | | | | |
| Moneymaker | 0.70 b | 0.82 d | 3.81 b | 5.52 d |

| | | | | |
|---------------------|--------|--------|--------|--------|
| Momotaro | 0.74 a | 0.76 f | 3.90 a | 5.36 f |
| LA1578 | 0.67 c | 0.95 a | 3.62 d | 5.91 a |
| Rutgers | 0.52 d | 0.72 g | 3.27 g | 5.20 g |
| Kentucky Beefsteack | 0.67 c | 0.79 e | 3.49 f | 5.45 e |
| Nunhems-FM001 | 0.69 b | 0.83 c | 3.51 e | 5.53 c |
| Ailsa Craig | 0.75 a | 0.85 b | 3.78 c | 5.63 b |
| <i>Significance</i> | | | | |
| SL | *** | *** | *** | *** |
| G | *** | *** | *** | *** |
| SL*G | *** | ** | *** | ** |

Table 3. Thermal Index (Ig) per treatment ($n = 21$) and genotype ($n = 3$). Within the same main effect and for each parameter, the same lowercase letters in the same column indicate that the mean values are not significantly different ($p = 0.05$). An ANOVA was done to determine the overall effect of the treatment or genotypes on the stomatal density. Significance: ***, **, and * for $p \leq 0.001$, $p \leq 0.01$, and $p \leq 0.05$, respectively; NS—not significant. Per genotype and treatment, a post hoc test was performed and the significant different groups are indicated by letter. Identical letters in the same column indicate that means are not significantly different ($p > 0.05$).

| | Thermal Index (Ig) | | | |
|------------------------|--------------------|---------|---------|---------|
| | Expt. 1 | Expt. 2 | Expt. 3 | Expt. 4 |
| Treatments (SL) | | | | |
| HPS | 1.2 b | 1.4 b | 2.1 b | 2.3 a |
| LED | 1.5 a | 2.1 a | 2.5 a | 2.4 a |
| Genotypes (G) | | | | |
| Money maker | 1.8 a | 2.5 a | 1.9 cd | 2.4 b |
| Momotaro | 1.3 bc | 1.8 b | 2.5 b | 1.8 cd |
| LA1578 | - | 1.8 bc | 2.4 b | 3.3 a |
| Rutgers | 1.5 ab | 1.7 bc | 1.6 d | 1.7 d |
| Kentucky Beefsteack | 0.9 d | 1.5 cd | 2.4 b | 2.1 bc |
| Nunhems-FM001 | 1.0 cd | 1.5 bcd | 2.2 bc | 1.9 cd |
| Ailsa Craig | 1.7 a | 1.3 d | 3.1 a | 3.1 a |
| <i>Significance</i> | | | | |
| SL | ** | *** | ** | NS |
| G | *** | *** | *** | *** |
| SL*G | NS | *** | *** | NS |

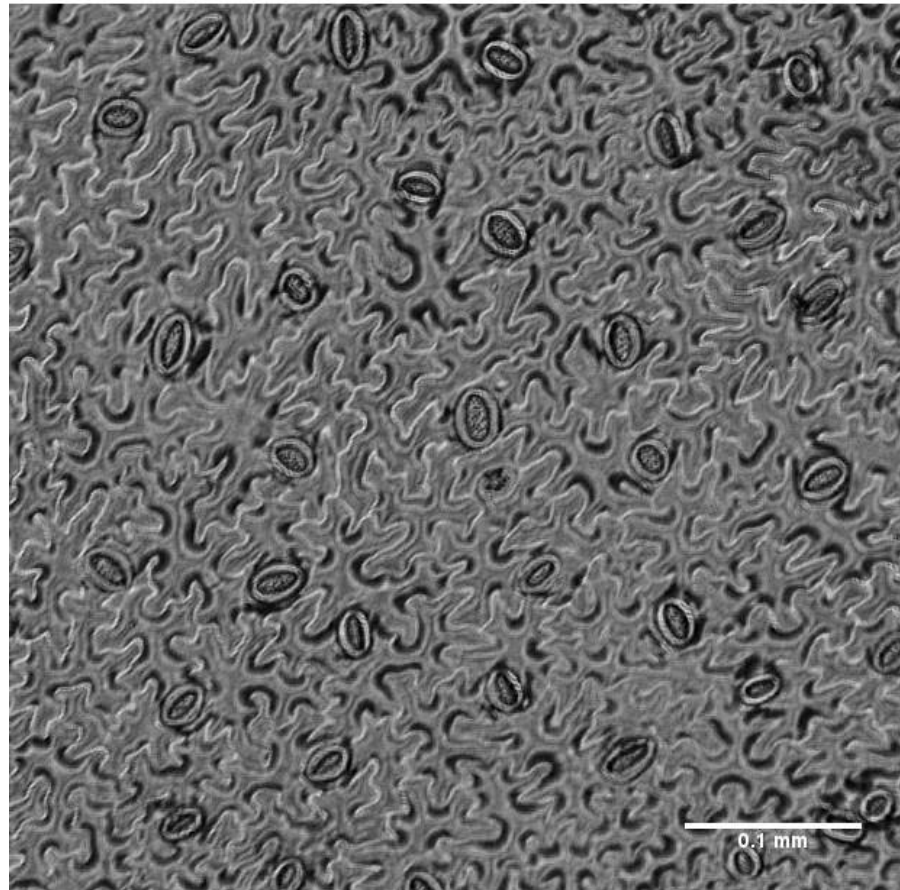


Figure 1. Stomatal imprint of cv. 'Rutgers' grown under LEDs supplemental light during the fourth trial.

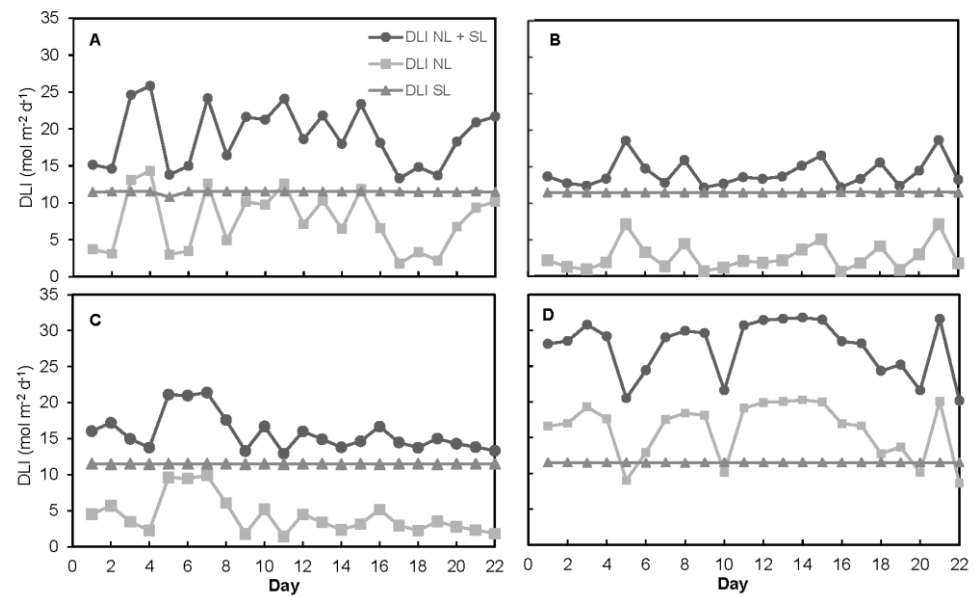


Figure 2. Daily light integral from natural light (DLI NL), from supplemental light (DLI SL) and the sum of DLI from supplemental light plus natural light (DLI NL + SL), in both treatment conditions, during experiments 1–4 (A–D).

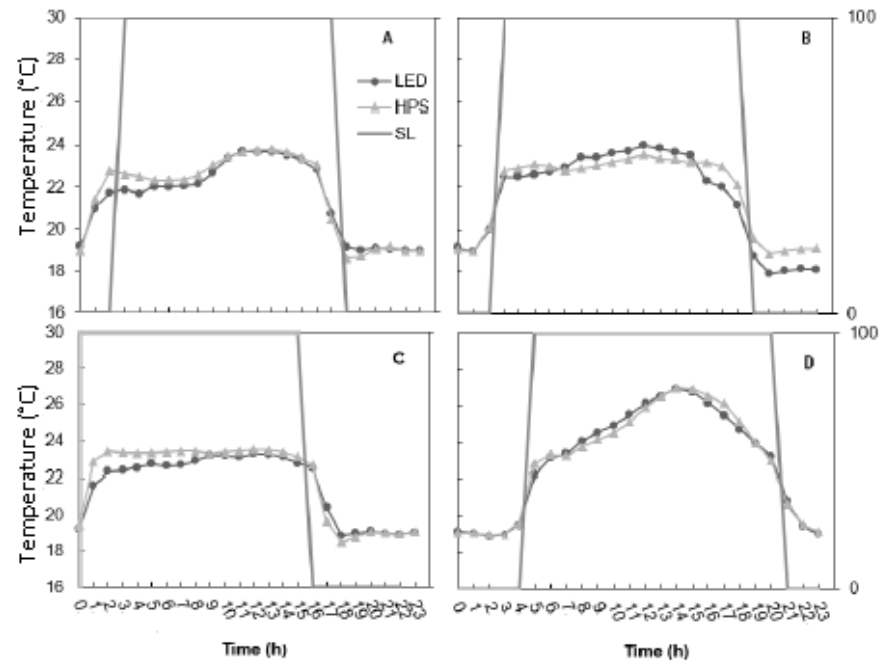


Figure 3. Air temperature (in °C) in greenhouse compartments provided with HPS and LEDs supplemental light during Table 1. (A), Expt. 2 (B), Expt. 3 (C) and Expt. 4 (D). Each point is the average value of 6 measurements per hour for 22 days.