Supporting Information Figs S1–S4 and Notes S1

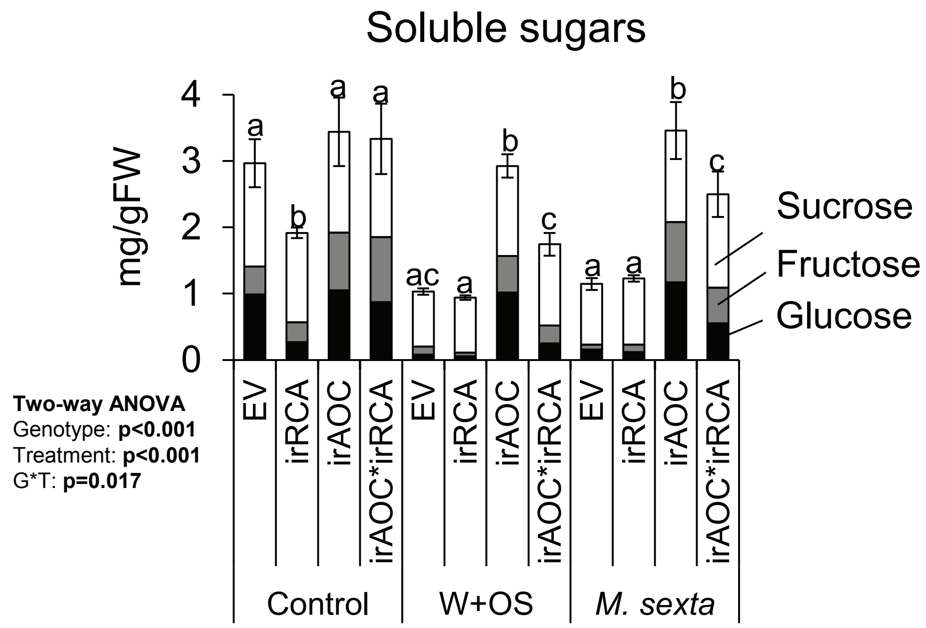
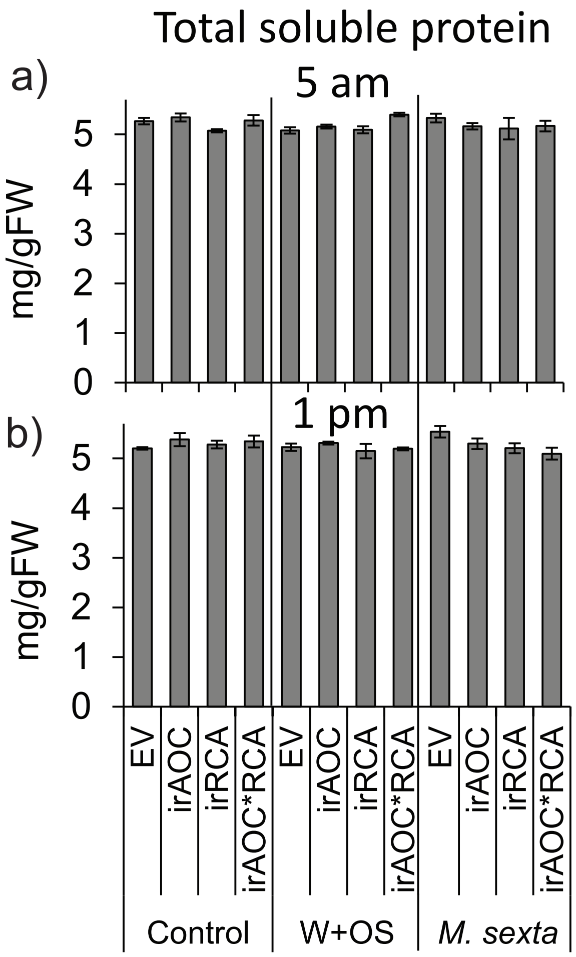


Figure S1. *IrAOC plants have higher, irRCA*irAOC intermediate and EV and irRCA plants lower sugar concentrations in the leaves*. Average (±SE) glucose, fructose and sucrose levels of control, W+OS-treated and *M. sexta*-attacked plants harvested at 5 am. IrRCA: RCA-silenced plants; irAOC: allene oxide cyclase-silenced plants; irRCA*irRCA: Hemizygous crosses between allene oxide cyclase and RCA-silenced plants; EV: empty vector tranformed-plants. Different letters indicate significant differences ($p<0.05$) among genotypes within each treatment.



c) **Three-way ANOVA**

Time (T): p=0.132
Genotype (G) p=0.102
Treatement (Tt) p=0.402
T*G p=0.396
T*Tt p=0.866
G*Tt p=0.053
T*G*Tt p=0.653

Figure S2. *Soluble protein levels remain unaltered in response to simulated and actual M. sexta herbivory in EV, irAOC, irRCA and irAOC*irRCA plants.* Average (±SE) soluble protein content of leaves harvested at 5 am (a) and 1 pm (b). Results of a three-way ANOVA are shown (c). Note that the Bradford assay used here cannot determine RuBisCO levels accurately, which have been shown to decrease upon herbivore attack.

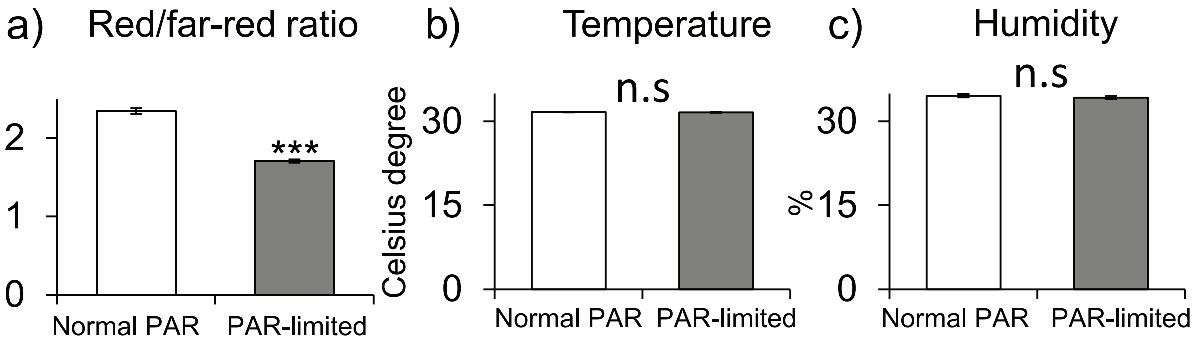


Figure S3. *PAR-reduction treatments do not alter temperature and humidity in the plant headspace, but slightly reduce red/far-red ratios*. Average (±SE) red/far-red ratio (a), temperature (b) and humidity in the plant headspace (c). Asterisks indicate significant differences (***, $p<0.001$). n.s: not significant.

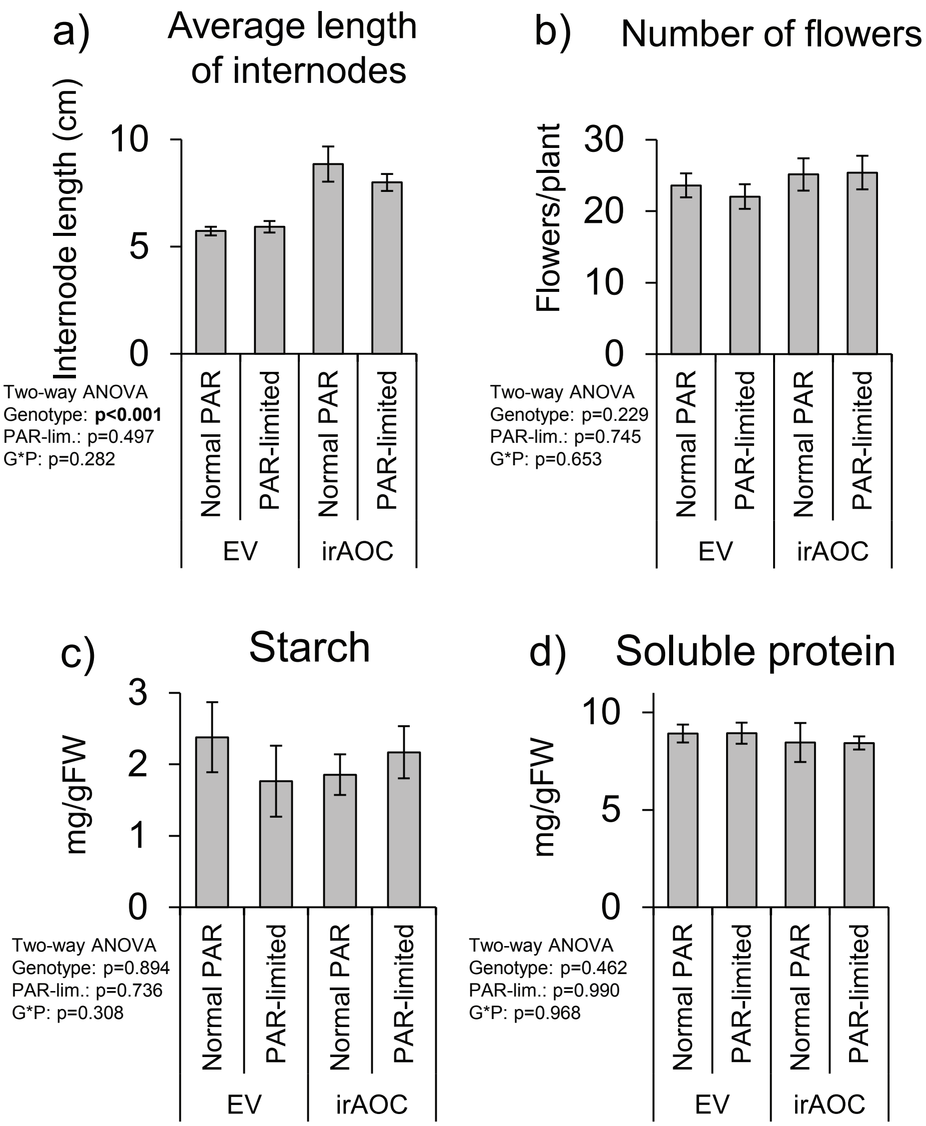


Figure S4. *No evidence of shade avoidance responses in PAR-reduced plants*. Average (±SE) length of internodes (a), number of flowers (b), starch content (c) and soluble protein (d).

Note S1. Detailed Statistical tests

Unless otherwise stated, all statistical tests were carried out with Sigma Plot 12.0 (Systat Software Inc., San Jose, CA, USA) using analysis of variance (ANOVA). Levene's and Shapiro–Wilk tests were applied to determine error variance and normality. Two-way ANOVA and Holm–Sidak *post-hoc* tests were carried out to test the effect of jasmonate-deficiency on leaf sugar (each sugar type was tested individually), starch and protein levels with genotype and developmental stage as factors. Correlations between jasmonic acid (JA) and jasmonoyl-L-Isoleucine (JA-Ile) constitutive levels and soluble sugar content were tested using Pearson product moment tests. To assess the effect of jasmonate-deficiency on sugar levels and invertase activity, two-way ANOVA and Holm–Sidak *post-hoc* tests, with time of harvesting and genotype as factors, were carried out. Correlations between soluble sugars and invertase activity were tested using Pearson product moment tests. To test the effect of simulated and actual *M. sexta* herbivory on sugar and protein levels in EV, irRCA, irAOC and irAOC*RCA plants, two-way ANOVA and Holm–Sidak *post-hoc* tests, with genotype and treatment as factors were carried out for each time point individually. Caterpillar mass on EV, irRCA, irAOC and irAOC*irRCA plants was assessed by two-way ANOVA and Holm–Sidak *post-hoc* tests, with genotype and caterpillar age as factors. To test the effect of PAR-reduction on sugar, starch and soluble protein levels and average length of internodes and number of flowers, two-way ANOVA and Holm–Sidak *post-hoc* tests, with genotype and type of filter as factors, were carried out. Caterpillar mass on PAR-reduced plants was tested by two-way ANOVA and Holm–Sidak *post-hoc* tests, with genotype and type of filter as factors within each caterpillar age individually. The effect of glucose and fructose on caterpillar mass was tested by a two-way ANOVA and Holm–Sidak *post-hoc* tests, with type of diet and caterpillar age as factors. Sugar levels of and caterpillar mass on semi-artificial diets were assessed by one-way ANOVA and Dunn's *post-hoc* tests. In the caterpillar experiments, due to practical restrictions, we had multiple larvae per box and multiple boxes per type of diet (replicates). We assessed the effect of the diet type on caterpillar mass using either each caterpillar as an independent replicate or the mean values within each box as an independent replicate; similar statistical results were obtained. The effect of semi-artificial diets on caterpillar survivorship was analyzed in R (R Development Core Team, 2012) using Generalized Linear Models (GLM), under Binomial distribution with Chi-square tests. Residual analysis was carried out to verify the suitability of error distribution and model fitting. When the data were over dispersed, a quasi-binomial distribution with F-test was carried out. Caterpillar mass, amount of ingested food and efficiency of conversion of ingested food on artificial diets with variable concentrations of protein/and or sugars were tested by two-way ANOVA and Holm–Sidak *post-hoc* tests, with sugar and protein content as factors. Datasets from experiments that did not fulfill the assumptions for ANOVA were natural log-, root square- or rank-transformed prior to analysis.

R Development Core Team. 2012. A language and environment for statistical computing. Vienna, Austria: R Foundation for Statistical Computing.