

Supplementary material to

Biogenic volatile organic compounds emitted by basil grown in a vertical farm under two different red:blue LED ratios

Table A. ERs of the BVOCs determined at the three sampling intervals (5, 10, and 15 minutes) under RB₁ and RB₃ treatments, for the young (YRB₁, YRB₃) and the mature (MRB₁, MRB₃) stage. ERs are referred to the fresh rather than dry foliage biomass (g) (A.1), since volatile emissions were collected from living plants, and the projected leaf area (m²) (A.2), measured during each term. Different low-case letters indicate significant difference between the treatment ($p \leq 0.05$).

stage	interval	ng gfw ⁻¹ h ⁻¹								
		<i>α</i> -pinene	<i>β</i> -pinene	<i>o</i> -cymene	<i>β</i> -myrcene	1.8-cineole	LOX	<i>β</i> -caryophyllene	<i>trans</i> - <i>β</i> -farnesene	methyl salicylate
Y RB ₁	5	50.34	78.79	0.72	45.18	0	91.90	739.24	0	37.10
	10	6.70	2.11	0.92	1.44	5.35	10.54 ^a	17.71	0	2.53
	15	0	0	0.41	0	1.82	2.42	0	0	0
Y RB ₃	5	0	0	1.08	0	34.68	63.10	0	0	0
	10	0	0	1.47	0	16.92	4.43 ^b	0	0	0
	15	0	0	0.53	0	4.24	1.75	0	0	0
M RB ₁	5	0	0	0	0	77.63	2.41	0	21.86	0
	10	0	0	0	0	7.18 ^a	1.90	0	0.00	0
	15	0	0	0.58 ^a	0	50.56	0	0	0.52	0
M RB ₃	5	0	0	0.26	0	926.10	10.92	20.98	460.65	0
	10	0	0	0.98	0	147.76 ^b	1.72	0	11.18	0
	15	0.80	0	1.71 ^b	0	0	2.39	0.45	0	1.10

A.1

stage	interval	ng m ⁻² h ⁻¹								
		<i>α</i> -pinene	<i>β</i> -pinene	<i>o</i> -cymene	<i>β</i> -myrcene	1.8-cineole	LOX	<i>β</i> -caryophyllene	<i>trans</i> - <i>β</i> -farnesene	methyl salicylate
Y RB ₁	5	124.70	195.15	1.79	111.91	0	227.64	1831.08	0	91.91
	10	16.59	5.23	2.28	3.58	13.26	26.11 ^a	43.87	0	6.26
	15	0	0	1.01	0	4.51	5.99	0	0	0
Y RB ₃	5	0	0	0	0	182.70	5.68	0	51.44	0
	10	0	0	0	0	16.90	4.48 ^b	0	0	0
	15	0	0	1.37	0	118.98	0	0	1.22	0
M RB ₁	5	0	0	2.81	0	90.11	163.95	0	0	0
	10	0	0	3.81	0	43.97 ^a	11.52	0	0	0
	15	0	0	1.37 ^a	0	11.01	4.56	0	0	0
M RB ₃	5	0	0	0.65	0	2361.10	27.83	53.49	1174.42	0
	10	0	0	2.51	0	376.71 ^b	4.39	0	28.50	0
	15	2.04	0	4.36 ^b	0	0	6.11	1.15	0	2.81

A.2

Table B. Variation rates (positive and negative) of environmental (T, RH, CO₂) and physiological (G_s) parameters along the sampling under RB₁ and RB₃ light in the young and mature plant stage. In **B.1** and **B.2** are highlighted the significant differences of the variation rates of the individual parameter between the sampling intervals within the same treatment, indicated by different lowercase letters. In **B.3** and **B.4** are reported the significant differences of the variation rates of the individual parameter between the treatments within the same sampling interval. Symbols '***', '**', and '*', refer to a significance of a *p* value ≤ 0.001, 0.01, and 0.05 respectively.

30-32 DAS						
parameter	interval	RB1		p	RB3	p
CO2	5	-6.13 a			-55.13 a	*
CO2	10	19.90 a			-102.67 ab	
CO2	15	-4.50 a			42.23 b	*
T	5	-0.13 a	***		-0.07 a	
T	10	0.00 b	***		0.17 b	*
T	15	0.23 c	***		0.17 a	
RH	5	6.20 a	***		6.03 a	***
RH	10	4.47 b	***		3.17 b	***
RH	15	1.97 c	***		4.90 c	***
Gs	5	-39.33 a			-13.83 a	
Gs	10	-8.50 a			-11.83 b	*
Gs	15	-24.77 a			-56.07 a	

B.1

36-39 DAS						
parameter	interval	RB1		p	RB3	p
CO2	5	-36.93 a			-89.90 a	
CO2	10	7.13 a			-131.90 a	
CO2	15	-4.50 a			293.27 a	
T	5	-0.07 a	*		0.00 a	
T	10	0.27 b			0.10 a	
T	15	0.23 b			0.27 a	
RH	5	2.17 a	**		6.93 a	**
RH	10	3.30 b			12.57 b	
RH	15	1.97 b			11.47 b	
Gs	5	-1.20 a	***		-6.03 a	***
Gs	10	-3.97 b	***		-0.43 b	
Gs	15	3.23 c	***		-12.93 b	

B.2

30-32 DAS				
parameter	interval	RB1	RB3	p
CO2	5	-6.13	-55.13	
CO2	10	19.90	-102.67	
CO2	15	-4.50	42.23	
T	5	-0.13	-0.07	**
T	10	0.00	0.17	***
T	15	0.23	0.17	
RH	5	6.20	6.03	
RH	10	4.47	3.17	
RH	15	1.97	4.90	***
Gs	5	-39.33	-13.83	
Gs	10	-8.50	-11.83	*
Gs	15	-24.77	-56.07	

B.3

36-39 DAS				
parameter	interval	RB1	RB3	p
CO2	5	-36.93	-89.90	
CO2	10	7.13	-131.90	
CO2	15	-4.50	293.27	
T	5	-0.07	0.00	***
T	10	0.27	0.10	**
T	15	0.23	0.27	
RH	5	2.17	6.93	***
RH	10	3.30	12.57	**
RH	15	1.97	11.47	*
Gs	5	-1.20	-6.03	**
Gs	10	-3.97	-0.43	***
Gs	15	3.23	-12.93	***

B.4

A

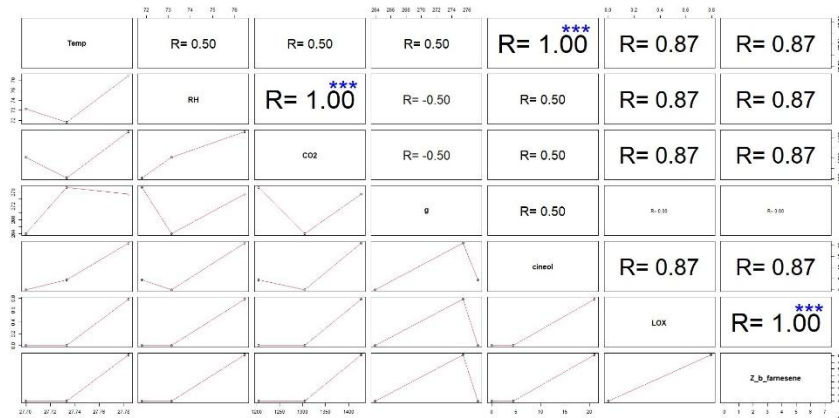


B

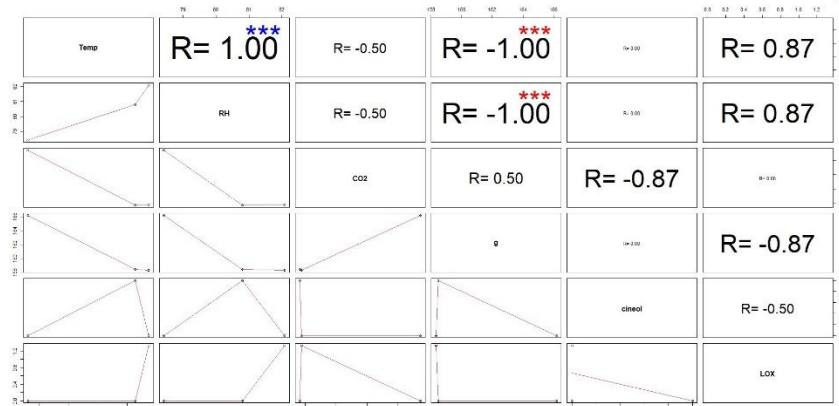


36-39 DAS

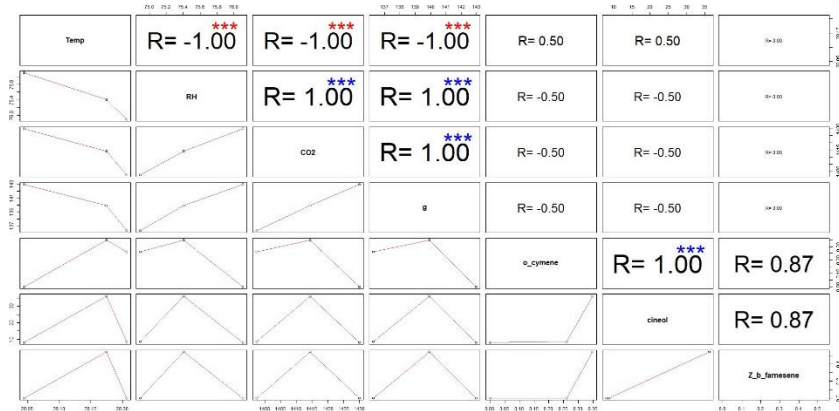
RB1



A



B

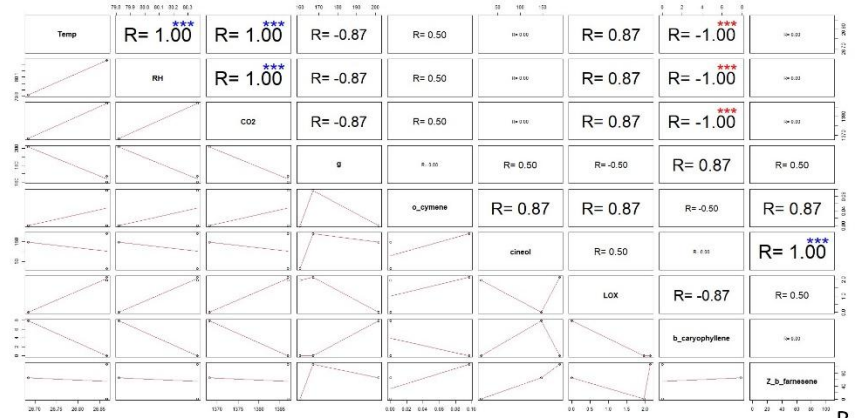


C

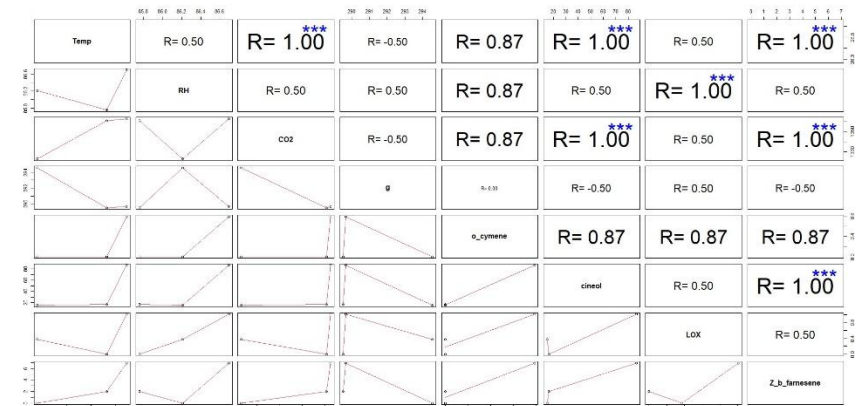


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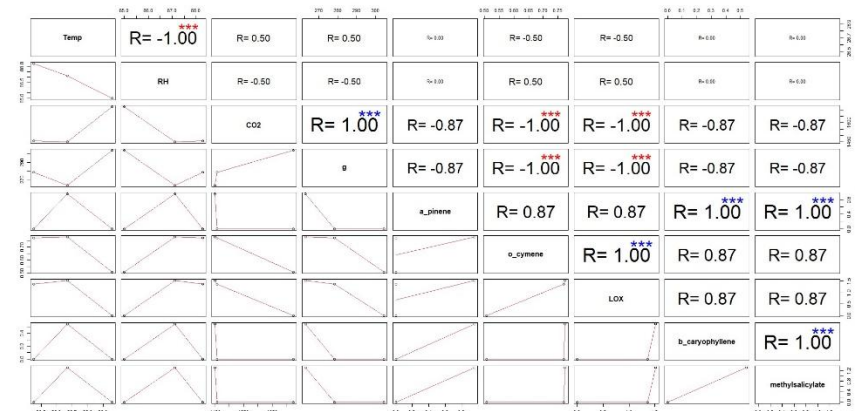
RB3



E



F



G

Fig. A. Correlation matrices showing positive and negative Spearman (r_s) correlations between the detected BVOC emissions and the levels of the environmental (T, RH, CO₂) and physiological (g_s) parameters monitored during volatile collection in the young (**A.1**) and mature (**A.2**) plant stage under RB₁ and RB₃ light along respectively 5- (A, B), 10- (C, D) and 15- (E, F) minutes interval. Symbols '***' above Spearman r_s indicate perfect correlations ($r_s \pm 1$, $p \leq 0.05$), although not significant ($p > 0.05$) not-perfect correlations having $r_s \pm 0.8$ were considered meaningful.