Supporting Information for

Changes in Compositions of Galactolipids, Triacylglycerols, and Tocopherols of Lettuce Varieties (*Lactuca sativa* L.) with Type, Age, and Light Source

Contents of Supporting Information:

1.) Experimental details for Agilent 1200 HPLC system (Agilent Technologies, Santa Clara, CA)

Solvent module with membrane degasser (G1379B), quaternary pump (G1311A), autosampler (G1329A) with 1290 thermostat (G1330B) at 15 ºC, thermostatted column compartment (G1316A) at 10 ºC, diode array detector (DAD) SL (G1315C), fluorescence detector (FLD) (G7121A), two-channel 24-bit analog-to-digital converter #1 (ADC) (35900E). Two Inertsil ODS-2 columns in series, 25 cm × 4.6 mm, 5 µm particles (GL Sciences, Torrance, CA, USA) joined by a circularly bent 7-cm piece of 0.007 in. i.d. stainless steel tubing, with. 20 µL of standards and samples injected. All solvents Fisher Optima LC-MS Grade or equivalent.

Gradient elution as follows:

a) Supporting Table 1. HPLC gradient for fat-soluble vitamin (FSV) standards:

Supporting Table 1. HPLC gradient for fat-soluble vitamins.

Time (min)	%A (MeOH)	%B (ACN)	%C (EtOH)	%D (DCM)
0.0	95.0	0.0	5.0	0.0
25.0	95.0	0.0	5.0	0.0
30.0	60.0	0.0	15.0	25.0
40.0	65.0	0.0	10.0	25.0
50.0	65.0	0.0	10.0	25.0
51.0	95.0	0.0	5.0	0.0
54.0	95.0	0.0	5.0	0.0

b) Supporting Table 2. HPLC gradient for lettuce leaf extracts:

Supporting Table 2. HPLC gradient for lettuce leaf extracts.

Time (min)	%A (MeOH)	%B (ACN)	%C (EtOH)	%D (DCM)
0.0	95.0	0.0	5.0	0.0
25.0	95.0	0.0	5.0	0.0
30.0	60.0	0.0	15.0	25.0
40.0	65.0	0.0	10.0	25.0
50.0	65.0	0.0	10.0	25.0
70.0	65.0	0.0	10.0	25.0
90.0	50.0	0.0	25.0	25.0
100.0	35.0	0.0	40.0	25.0
110.0	30.0	0.0	45.0	25.0
118.0	30.0	0.0	45.0	25.0
120.0	95.0	0.0	5.0	0.0
130.0	95.0	0.0	5.0	0.0

c) Detector settings:

i) Diode array detector (DAD).

Supporting Table 3. HPLC detector settings: Diode array detector (DAD).

Wavelength (λ_{nm})	**Bandwidth($\Delta\lambda_{nm}$)**	**Reference λ_{nm}**	**Reference $\Delta\lambda_{nm}$**	**Analyte(s)**
210	5	360	100	Generic
248	9	360	100	Phylloquinone (Vit. K_1)
265	9	360	100	Vitamin D_2 & D_3
297	11	450	100	Tocopherols (Vit. E)
326	11	450	100	Retinol (Vit. A), Retinyl Acetate, Retinyl Palmitate

ii) Fluorescence detector (FLD).

Supporting Table 4. HPLC detector settings: Fluorescence detector (FLD).

Excitation Wavelength (λ_{nm})	**Emission Wavelength (λ_{nm})**	**Analyte(s)**
Zero order [Xe lamp: 200-1200 nm]	310	α-Tocopheryl Acetate
Zero order (all λ)	330	Tocopherols (Vit. E)
Zero order (all λ)	420	Fluorescent 18:4containing TAG reported in *Parinari glaberrimum*
Zero order (all λ)	470	Retinol (Vit. A), Retinyl Acetate, Retinyl Palmitate

iii) Charged aerosol detector (CAD).

Supporting Table 5. HPLC detector settings: Charged aerosol detector (CAD).

Parameter	**Setting**
Range	20 pA
Filter	3
Power function	1.00
Gas (Nitrogen)	35 psi
Output offset	0%

iv) Evaporative light scattering detector (ELSD).

Supporting Table 6. HPLC detector settings: Evaporative light scattering detector (ELSD).

Parameter	**Setting**
Evaporator	80 ºC
Nebulizer	90 ºC
Gas (Nitrogen)	1.20
Photomultiplier	8.4
Data Rate	40 Hz
Smoothing	5

2.) Experimental details for all mass spectrometers: TSQ Vantage EMR, APPI-MS on TSQ Quantum Access Max, and high-resolution accurate-mass (HRAM) ESI-MS on QExactive.

a) Supporting Table 7. TSQ Vantage EMR instrument method for FSV.

Supporting Table 7. TSQ Vantage EMR tandem sector quadrupole mass spectrometer (Thermo Fisher Scientific, San Jose, CA, USA) using atmospheric pressure chemical ionization (APCI). Parameters for HPLC-APCI-MS analysis using multi-segment qualitative and quantitative analysis of **FSV standards** by selected ion monitoring (SIM) and selected reaction monitoring (SRM).

APCI Source Parameters	
Parameter	**Setting**
Vaporizer heater	400 °C
Sheath gas (Nitrogen)	50
Auxiliary gas (Nitrogen)	5
Sweep gas	0
Capillary temp.	250 °C
Declustering voltage	0 V

1.0 mTorr Argon collision induced dissociation (CID) gas turned on throughout all scans.
All scans except precursor scans used Q3. All used 0.7 FWHM peak widths unless otherwise stated.
All scans were in (+) ion mode with centroided masses.

Segment 1 (0-2 min)	
Scan event 1. Q3 Full-scan MS	
Scan range	*m/z* 200-2000
Scan time	1.8 s
Scan events 2. & 3. DDA MS/MS	
Signal threshold	1e4
Scan time	1.0 s
Collision energy	19 V
Repeat	Top 2 precursors

Segment 2 (2-18 min)		
Scan event 1. Full-scan MS same as Segment 1		
Scan event 2. 1 DDA MS/MS same as Segment 1		
Scan event 3. Q3 Selected Ion Monitoring (**SIM**)		
0.5 s scan time	0.5 scan width	
m/z	**Analyte**	
269.227	All retinols	
287.238	Retinol (Vit. A)	
301.217	Retinoic Acid	
329.248	Retinyl Acetate	
Scan event 4. Selected Rxn. Monitoring (**SRM**)		
Scan time 0.5 s	Scan width 0.5	CID 19 V
Precursor (*m/z*)	**Product (*m/z*)**	**Analyte**

Segment 3 - Scan Event 3 – SIM Continued		
m/z	**Analyte**	
403.358	δ-Tocopherol	
416.365	γ,β-Tocopherol $[M]^{+\cdot}$	
417.373	γ,β-Tocopherol $[M+H]^{+}$	
431.389	α-Tocopherol	
437.427	d_6-α-Tocopherol	
Scan event 4. Selected Reaction Monitoring (**SRM**)		
Scan time 0.5 s	Scan width 0.5	CID 19 V
Precursor (*m/z*)	**Product (*m/z*)**	**Analyte**
385.347	367.337	Vitamin D_3
397.347	379.337	Vitamin D_2
403.358	137.122	δ-Tocopherol
416.365	151.133	γ,β-Tocopherol
417.373	151.133	γ,β-Tocopherol
431.389	165.149	α-Tocopherol
437.427	171.167	d_6-α-Tocopherol
Segment 4 (36-44 min)		
Scan event 1. Full-scan MS same as Segment 1		
Scan event 2. 1 DDA MS/MS same as Segment 1		
Scan event 3. Q3 Selected Ion Monitoring (**SIM**)		
0.5 s scan time	0.5 scan width	

269.227	93.070	Retinol	***m/z***	**Analyte**
301.217	159.123	Retinoic Acid	451.358	Phylloquinone (Vit. K_1)
329.248	269.227	Ret. Acetate	473.400	α-Tocopheryl Acetate

Segment 3 (18-36 min)		**Scan event 4.** Selected Reaction Monitoring (**SRM**)		
Scan event 1. Full-scan MS same as Segment 1		Scan time 0.5 s	Scan width 0.5	CID 19 V
Scan event 2. DDA MS/MS same as Segment 1		**Precursor (*m/z*)**	**Product (*m/z*)**	**Analyte**
Scan event 3. Q3 Selected Ion Monitoring (**SIM**)		451.358	187.240	Vitamin K_1
0.5 s scan time	0.5 scan width	473.400	207.250	α-Toco. Acetate

m/z	**Analyte**	**Segment 5 (44-54 min)**
385.347	Cholecalciferol (Vit. D_3)	Identical to Segment 4 for these analyses.
397.347	Ergocalciferol (Vit. D_2)	SIM and SRM for β-Carotene removed.

b) Supporting Table 8: TSQ Vantage EMR instrument method for lettuce leaf extracts (LLE).

Supporting Table 8. TSQ Vantage EMR tandem sector quadrupole mass spectrometer (Thermo Fisher Scientific, San Jose, CA, USA) using atmospheric pressure chemical ionization (APCI). Parameters for HPLC-APCI-MS analysis using multi-segment qualitative and quantitative analysis of **lettuce leaf extracts** by selected ion monitoring (SIM) and selected reaction monitoring (SRM).

APCI Source Parameters – Same as for FSV given in Table S-7

1.0 mTorr Argon CID gas turned on throughout all scans. All scans except precursor scans used Q3 with 0.7 FWHM peak widths unless otherwise stated. All scans were in (+) ion centroid mode.

Segment 1 (0-2 min)	**Segment 5 (44-130 min)**	
Scan event 1. Same Full-Scan MS as for FSV.	**Scan event 1.** Same Full-Scan MS as for FSV.	
Scan event 2. Same 1 DDA MS/MS as for FSV.	**Scan event 2.** Narrow range full-scan MS of TAGs	
Scan event 3. Same DDA MS/MS as for FSV.	Scan range	*m/z* 800-1100
Segment 2 (2-18 min)	Scan time	0.40 s
Scan event 1. Same Full-Scan MS as for FSV.	**Scan event 3.** DDA MS/MS of TAGs	
Scan event 2. Same 1 DDA MS/MS as for FSV.	Signal threshold	1e4
Scan event 3. Same 4 x **SIM** as for FSV.	Scan time	1.0 s
Scan event 4. Same 3 x **SRM** as for FSV.	Collision energy	30 V
Segment 3 (18-36 min)	Repeat	Top precursor only
Scan event 1. Same Full-Scan MS as for FSV.	**Scan event 4.** Narrow range MS of $[DAG]^+$	
Scan event 2. Same 1 DDA MS/MS as for FSV.	Scan range	*m/z* 400-750
Scan event 3. Same 7 x **SIM** as for FSV.	Scan time	0.45 s
Scan event 4. Same 7 x **SRM** as for FSV.	**Scan event 5.** DDA MS/MS of $[DAG]^+$	
Segment 4 (36-44 min)	Signal threshold	1e4
Scan event 1. Same Full-Scan MS as for FSV.	Scan time	0.75 s
Scan event 2. Same 1 DDA MS/MS as for FSV.	Collision energy	40 V
Scan event 3. Same 2 x **SIM** as for FSV.	Repeat	Top precursor only
Scan event 4. Same 2 x **SRM** as for FSV.		

c) Supporting Table 9: QExactive HRAM instrument methods (FSV and LLE).

Supporting Table 9. QExactive high resolution accurate mass Orbitrap™ mass spectrometer (Thermo Fisher Scientific, San Jose, CA, USA) for qualitative HPLC analysis.

All runs use ammonium formate (NH_4OCOH) in methanol (1:4) at 20 µL/min supplied by Applied Biosystems AB140C dual piston syringe pump.

Fat-Soluble Vitamin Analysis			
Full-Scan ESI-MS		**Data-Dependent Acquisition (DDA) MS/MS**	
Parameter	**Setting**	**Parameter**	**Setting**
Source parameters	See below	In-source CID	0.0 eV
Run time	54 min	Precursor resolution	140,000
In-source CID	45.0 eV	Product resolution	70,000
Resolution	140,000	Precursor scan range	*m/z* 300-750
Scan range	*m/z* 200-2000	Loop	Top 2 precursors
AGC target	3e6	Isolation window	1.0 *m/z*
Max. inj. time	200 ms	Norm. collision energy	50
Mode	Centroid	Max. inj. time	Pre:100 ms/Prod:50 ms
Polarity	+ and -		

Lettuce Leaf Extract 130 min Analysis			
Up to 44 min same as FSV above.			
Full-Scan ESI-MS		**TAG DDA MS/MS**	
Parameter	**Setting**	**Parameter**	**Setting**
Sheath gas (Nitrogen)	25	In-source CID	0.0 eV
Auxiliary gas (Nitrogen)	0	Resolution	Pre:140,000/Prod:70,000
Sweep gas	0	Precursor scan range	*m/z* 700-1100
Spray voltage	4000 V	Loop	Top 2 precursors
Capillary temp.	250 ºC	Isolation window	1.0 *m/z*
Run time	130 min	Norm. collision energy	15
In-source CID	45.0 eV	**DAG DDA MS/MS**	
Resolution	140,000	In-source CID	**80.0 eV**
Scan range	*m/z* 200-2000	Resolution	Pre:140,000/Prod:70,000
AGC target	3e6	Precursor scan range	*m/z* 350-750
Max. inj. time	200 ms	Loop	Top 3 precursors
Mode	Centroid	Isolation window	1.0 *m/z*
Polarity	+ and -	Norm. collision energy	35

d) Supporting Table 10: TSQ Quantum Access Max instrument methods for FSV

Supporting Table 10. TSQ Quantum Access Max tandem sector quadrupole mass spectrometer (Thermo Fisher Scientific, San Jose, CA, USA) using atmospheric pressure photoionization (APPI). Parameters for HPLC-APCI-MS analysis using multi-segment qualitative and quantitative analysis of **fat-soluble vitamins** by selected ion monitoring (SIM) and selected reaction monitoring (SRM).

APPI Source Parameters

Parameter	**Setting**
Vaporizer heater	400 ºC
Sheath gas (Nitrogen)	50
Auxiliary gas (Nitrogen)	5
Sweep gas	0
Capillary temp.	250 ºC
Declustering voltage	10 V

1.0 mTorr Argon collision induced dissociation (CID) gas turned on throughout all scans.
All scans except precursor scans used Q3. All used 0.7 FWHM peak widths unless otherwise stated.
All scans were in (+) ion mode with centroided masses.

Segment 1 (0-2 min)	
Scan event 1. Q3 Full-scan MS	
Scan range	*m/z* 200-2000
Scan time	1.8 s
Scan events 2. & 3. DDA MS/MS	
Signal threshold	1e4
Scan time	1.0 s
Collision energy	19 V
Repeat	Top 2 precursors

Segment 2 (2-18 min)		
Scan event 1. Full-scan MS same as Segment 1		
Scan event 2. 1 DDA MS/MS same as Segment 1		
Scan event 3. Q3 Selected Ion Monitoring (**SIM**)		
0.5 s scan time	0.5 scan width	
m/z	**Analyte**	
269.227	All retinols	
287.238	Retinol (Vit. A)	
301.217	Retinoic Acid	
329.248	Retinyl Acetate	
Scan event 4. Selected Rxn. Monitoring (**SRM**)		
Scan time 0.5 s	Scan width 0.5	CID 19 V
Precursor (*m/z*)	**Product (*m/z*)**	**Analyte**
269.227	93.070	Retinol
301.217	159.123	Retinoic Acid

Segment 3 - Scan Event 3 – SIM Continued	
m/z	**Analyte**
403.358	δ-Tocopherol
416.365	γ,β-Tocopherol $[M]^{+\cdot}$
417.373	γ,β-Tocopherol $[M+H]^{+}$
431.389	α-Tocopherol
437.427	d_6-α-Tocopherol

Scan event 4. Selected Reaction Monitoring (**SRM**)		
Scan time 0.5 s	Scan width 0.5	CID 19 V
Precursor (*m/z*)	**Product (*m/z*)**	**Analyte**
385.347	367.337	Vitamin D_3
397.347	379.337	Vitamin D_2
403.358	137.122	δ-Tocopherol
416.365	151.133	γ,β-Tocopherol
417.373	151.133	γ,β-Tocopherol
431.389	165.149	α-Tocopherol
437.427	171.167	d_6-α-Tocopherol

Segment 4 (36-44 min)	
Scan event 1. Full-scan MS same as Segment 1	
Scan event 2. 1 DDA MS/MS same as Segment 1	
Scan event 3. Q3 Selected Ion Monitoring (**SIM**)	
0.5 s scan time	0.5 scan width
m/z	**Analyte**
451.358	Phylloquinone (Vit. K_1)

329.248	269.227	Ret. Acetate	473.400	α-Tocopheryl Acetate	
Segment 3 (18-36 min)			**Scan event 4.** Selected Reaction Monitoring (**SRM**)		
Scan event 1. Full-scan MS same as Segment 1			Scan time 0.5 s	Scan width 0.5	CID 19 V
Scan event 2. DDA MS/MS same as Segment 1			**Precursor (*m/z*)**	**Product (*m/z*)**	**Analyte**
Scan event 3. Q3 Selected Ion Monitoring (**SIM**)			451.358	187.240	Vitamin K_1
0.5 s scan time	0.5 scan width		473.400	207.250	α-Toco. Acetate
m/z	**Analyte**		**Segment 5 (44-54 min)**		
385.347	Cholecalciferol (Vit. D_3)		Identical to Segment 4 for these analyses.		
397.347	Ergocalciferol (Vit. D_2)		SIM and SRM for β-Carotene removed.		

e) Supporting Table 11: TSQ Quantum Access Max instrument methods for LLE

Supporting Table 11. TSQ Quantum Access Max tandem sector quadrupole mass spectrometer (Thermo Fisher Scientific, San Jose, CA, USA) using atmospheric pressure photoionization (APPI). Parameters for HPLC-APCI-MS analysis using multi-segment qualitative and quantitative analysis of **lettuce leaf extracts** by selected ion monitoring (SIM) and selected reaction monitoring (SRM).

APPI Source Parameters – Same as for FSV given in Table S-10		
1.0 mTorr Argon CID gas turned on throughout all scans. All scans except precursor scans used Q3 with 0.7 FWHM peak widths unless otherwise stated. All scans were in (+) ion centroid mode.		
Segment 1 (0-2 min)	**Segment 5 (44-130 min)**	
Scan event 1. Same Full-Scan MS as for FSV.	**Scan event 1.** Same Full-Scan MS as for FSV.	
Scan event 2. Same 1 DDA MS/MS as for FSV.	**Scan event 2.** Narrow range full-scan MS of TAGs	
Scan event 3. Same DDA MS/MS as for FSV.	Scan range	*m/z* 800-1100
Segment 2 (2-18 min)	Scan time	0.40 s
Scan event 1. Same Full-Scan MS as for FSV.	**Scan event 3.** DDA MS/MS of TAGs	
Scan event 2. Same 1 DDA MS/MS as for FSV.	Signal threshold	1e4
Scan event 3. Same 4 x **SIM** as for FSV.	Scan time	1.0 s
Scan event 4. Same 3 x **SRM** as for FSV.	Collision energy	30 V
Segment 3 (18-36 min)	Repeat	Top precursor only
Scan event 1. Same Full-Scan MS as for FSV.	**Scan event 4.** Narrow range MS of $[DAG]^+$	
Scan event 2. Same 1 DDA MS/MS as for FSV.	Scan range	*m/z* 400-750
Scan event 3. Same 7 x **SIM** as for FSV.	Scan time	0.45 s
Scan event 4. Same 7 x **SRM** as for FSV.	**Scan event 5.** DDA MS/MS of $[DAG]^+$	
Segment 4 (36-44 min)	Signal threshold	1e4
Scan event 1. Same Full-Scan MS as for FSV.	Scan time	0.75 s
Scan event 2. Same 1 DDA MS/MS as for FSV.	Collision energy	40 V
Scan event 3. Same 2 x **SIM** as for FSV.	Repeat	Top precursor only
Scan event 4. Same 2 x **SRM** as for FSV.		

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3. Supporting Results.

Supporting Table 12. Galactolipid (GAL) percent relative compositions by HPLC-APPI-MS for lipid extracts of greenhouse grown and growlight-treated romaine and Lolla Rossa, green- and red-leaf lettuce, respectively. Abbreviations: P, palmitic acid, C16:0; Po, palmitoleic acid, C16:1; Ln, linolenic acid, C18:3; L, linoleic acid, C18:2; O, oleic acid, C18:1; S, stearic acid, C18:0; A, arachidic acid, 20:0; B, behenic acid, 22:0; Lg, lignoceric acid, 24:0. Other: AG, acylglycerol DGDG, digalactosyl diacylglycerol; MGDG, monogalactosyl diacylglycerol; SQDG, sulfoquinovosyl diacylglycerol; TAG, triacylglycerol. Samples analyzed in triplicate unless labeled as being duplicate runs, indicated by asterisk *. Values of 0% indicate <0.05%.

	Greenhouse				L1				L2				L3				L4			
	Romaine		Lolla Rossa		Romaine		Lolla Rossa		Romaine		Lolla Rossa		Romaine		Lolla Rossa		Romaine		Lolla Rossa	
	3 Wk	8 Wk	3 Wk	8 Wk	3* Wk	8* Wk	3* Wk	8 Wk	3 Wk	8 Wk	3 Wk	8 Wk	3 Wk	8 Wk	3 Wk	8 Wk	3* Wk	8 Wk	3* Wk	8 Wk
LnLn-MGDG	53.4 ± 1.4	55.2 ± 1.8	52.9 ± 1.4	53.8 ± 0.9	53.4 ± 0.9	51.6 ± 0.7	55.1 ± 2.6	54.4 ± 0.6	55.7 ± 0.6	53.2 ± 0.2	53.2 ± 0.7	53.9 ± 1.2	54.6 ± 0.6	51.5 ± 1.3	54.6 ± 1.7	54.0 ± 0.6	55.1 ± 0.3	52.8 ± 1.3	53.3 ± 1.4	50.3 ± 1.2
LnLn-DGDG	27.5 ± 1.2	30.4 ± 1.2	32.5 ± 1.4	33.9 ± 0.7	34.3 ± 0.3	33.5 ± 0.1	35.1 ± 2.0	34.0 ± 0.6	31.7 ± 0.7	33.4 ± 0.1	37.5 ± 0.4	35.3 ± 1.3	33.4 ± 0.5	35.1 ± 1.0	36.0 ± 1.5	35.0 ± 0.5	32.0 ± 0	31.2 ± 0.3	35.8 ± 1.7	36.2 ± 1.4
PLn-DGDG	5.2 ± 0.4	5.4 ± 0.2	4.2 ± 0.1	4.6 ± 0.1	4.9 ± 0.5	4.7 ± 0.6	3.4 ± 0.5	4.3 ± 0.4	5.6 ± 0.2	4.8 ± 0.4	3.3 ± 0.2	3.8 ± 0.2	4.7 ± 0.1	3.7 ± 0.9	3.0 ± 0.3	3.4 ± 0.1	4.7 ± 0.1	4.9 ± 0.3	3.2 ± 0.1	3.3 ± 0.2
LLn-MGDG	5.7 ± 0.3	3.2 ± 0.2	4.1 ± 0.1	3.1 ± 0.1	3.2 ± 0	4.1 ± 0.1	2.5 ± 0.2	2.9 ± 0	2.9 ± 0.1	3.7 ± 0.1	2.4 ± 0.2	3.2 ± 0.1	3.2 ± 0.1	3.8 ± 0.3	2.5 ± 0.1	3.2 ± 0.1	3.4 ± 0.2	5.0 ± 0.1	3.1 ± 0.2	4.9 ± 0.2
LL-MGDG	2.6 ± 0.1	1.3 ± 0	1.6 ± 0	1.0 ± 0	1.1 ± 0	1.3 ± 0	0.9 ± 0	1.0 ± 0	1.1 ± 0.1	1.2 ± 0.1	0.8 ± 0	0.9 ± 0	1.1 ± 0	1.1 ± 0.3	0.8 ± 0.1	1.0 ± 0	1.2 ± 0	1.5 ± 0.1	1.0 ± 0	1.2 ± 0.1
PL-DGDG	1.3 ± 0.1	0.9 ± 0.1	1.3 ± 0	0.6 ± 0	0.6 ± 0.1	1.1 ± 0.2	0.5 ± 0.1	0.6 ± 0.1	0.6 ± 0	0.9 ± 0	0.5 ± 0	0.4 ± 0	0.5 ± 0	0.9 ± 0.4	0.5 ± 0.2	0.6 ± 0.1	0.7 ± 0	1.2 ± 0.3	0.9 ± 0.1	1.0 ± 0.1
LLn-DGDG	1.5 ± 0.1	1.0 ± 0.2	1.2 ± 0.1	0.7 ± 0.1	0.5 ± 0	0.9 ± 0.1	0.4 ± 0	0.5 ± 0.1	0.5 ± 0.1	0.4 ± 0.1	0.3 ± 0	0.3 ± 0.1	0.7 ± 0.1	1.2 ± 0.2	0.6 ± 0	0.6 ± 0.1	0.7 ± 0.1	1.0 ± 0.1	0.6 ± 0.1	0.7 ± 0.1
LL-DGDG	1.1 ± 0	0.8 ± 0	1.0 ± 0.1	0.6 ± 0	0.5 ± 0	0.6 ± 0.1	0.5 ± 0.2	0.6 ± 0.1	0.6 ± 0	0.6 ± 0.1	0.6 ± 0.1	0.4 ± 0.1	0.5 ± 0	0.6 ± 0.1	0.6 ± 0.1	0.6 ± 0	0.7 ± 0.1	0.7 ± 0.1	0.7 ± 0.1	0.6 ± 0
PLn-SQDG	0.5 ± 0.1	0.6 ± 0	0.5 ± 0	0.7 ± 0	0.4 ± 0	0.9 ± 0.1	0.6 ± 0	0.7 ± 0	0.5 ± 0.1	0.7 ± 0.1	0.6 ± 0	0.7 ± 0	0.5 ± 0	0.8 ± 0.1	0.5 ± 0	0.6 ± 0	0.7 ± 0	0.9 ± 0	0.6 ± 0	0.8 ± 0.1
PLn-MGDG	0.8 ± 0	0.6 ± 0	0.5 ± 0	0.5 ± 0	0.6 ± 0	0.7 ± 0	0.4 ± 0	0.5 ± 0	0.7 ± 0	0.8 ± 0	0.4 ± 0	0.6 ± 0.1	0.5 ± 0	0.4 ± 0.1	0.3 ± 0.1	0.4 ± 0	0.5 ± 0	0.6 ± 0.1	0.4 ± 0	0.5 ± 0
LnLn-SQDG	0.2 ± 0	0.3 ± 0	0.2 ± 0	0.3 ± 0	0.2 ± 0	0.2 ± 0	0.4 ± 0	0.3 ± 0	0.2 ± 0	0.2 ± 0	0.3 ± 0	0.3 ± 0	0.2 ± 0	0.4 ± 0	0.4 ± 0	0.4 ± 0	0.2 ± 0	0.2 ± 0	0.3 ± 0	0.3 ± 0
LLn-SQDG	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.2 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.2 ± 0
PL-MGDG	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0 ± 0	0.1 ± 0.3	0.1 ± 0.1	0.2 ± 0.2	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0 ± 0	0.1 ± 0

PL-SQDG	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0.1 ± 0	0.2 ± 0	0.1 ± 0	0.2 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0.1 ± 0.1	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0
LL-SQDG	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0.1	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0
PO-DGDG	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0
Sum	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %

Abbreviations: P, palmitic acid, C16:0; Po, palmitoleic acid, C16:1; Ln, linolenic acid, C18:3; L, linoleic acid, C18:2; O, oleic acid, C18:1; S, stearic acid, C18:0; A, arachidic acid, 20:0; B, behenic acid, 22:0; Lg, lignoceric acid, 24:0. Other: AG, acylglycerol DGDG, digalactosyl diacylglycerol; MGDG, monogalactosyl diacylglycerol; SQDG, sulfoquinovosyl diacylglycerol; TAG, triacylglycerol. Samples analyzed in triplicate unless labeled as being duplicate runs, indicated by asterisk *. Values of 0% indicate <0.05%.

Supporting Table 13. Triacylglycerol (TAG) percent relative compositions by HPLC-APPI-MS for lipid extracts of greenhouse grown and growlight-treated romaine and Lolla Rossa, green- and red-leaf lettuce, respectively.

	Greenhouse				L1				L2				L3				L4			
	Romaine		Lolla Rossa		Romaine		Lolla Rossa		Romaine		Lolla Rossa		Romaine		Lolla Rossa		Romaine		Lolla Rossa	
TAG	3 Wk	8 Wk	3 Wk	8 Wk	3* Wk	8* Wk	3* Wk	8 Wk	3 Wk	8 Wk	3 Wk	8 Wk	3 Wk	8 Wk	3 Wk	8 Wk	3* Wk	8 Wk	3* Wk	8 Wk
LnLnL[a]	3.8 ± 0.1	18.9 ± 0.4	14.2 ± 0.4	24.7 ± 0.6	10.5[b] ± 0.5	21.3 ± 0.4	15.1 ± 0[c]	22.9 ± 0.8	14.2 ± 2.1	17.0 ± 2.8	16.7 ± 2.4	23.7 ± 4.0	11.2 ± 0.4	19.0 ± 0.3	18.4 ± 0.4	17.0 ± 0.3	12.6 ± 0.1	18.5 ± 0.4	13.7 ± 1.1	25.1 ± 0.4
LLLn	4.7 ± 0.3	15.3 ± 0.1	16.7 ± 0.5	20.5 ± 0.2	11.8 ± 0.3	15.8 ± 0.2	17.3 ± 0.1	20.0 ± 0.5	13.9 ± 0.7	13.4 ± 1.1	16.6 ± 0.4	18.5 ± 1.5	13.0 ± 0.2	20.5 ± 0.7	17.8 ± 0.2	18.5 ± 0.9	15.0 ± 0.5	16.7 ± 0.1	18.0 ± 1.0	23.6 ± 0.6
LLL	23.5 ± 0.8	6.6 ± 0	11.4 ± 0.3	6.3 ± 0.1	15.6 ± 0	5.8 ± 0.2	11.9 ± 0.4	8.4 ± 0.3	10.9 ± 0.4	5.1 ± 0.3	9.2 ± 0.5	6.6 ± 0.6	14.4 ± 0.1	8.6 ± 0.1	11.4 ± 0.2	9.2 ± 0.1	13.3 ± 0.5	6.8 ± 0.1	12.5 ± 0.5	8.8 ± 0.3
PLLn	2.0 ± 0	10.6 ± 0.1	7.2 ± 0.2	8.3 ± 0.1	8.7 ± 0.1	12.9 ± 0.1	8.7 ± 0	9.6 ± 0.1	9.3 ± 0.4	14.0 ± 1.0	9.7 ± 0.4	11.1 ± 0.9	9.5 ± 0.1	12.1 ± 0.4	9.4 ± 0.2	9.8 ± 0.2	9.7 ± 0.1	14.4 ± 0.2	11.2 ± 0.4	9.7 ± 0.1
LnLnLn	1.4 ± 0.1	12.0 ± 0.2	6.4 ± 0.1	13.4 ± 0.4	4.1 ± 0	13.2 ± 0.1	7.1 ± 0.1	12.2 ± 0.4	5.8 ± 0.9	9.5 ± 1.6	7.7 ± 1.1	11.2 ± 1.3	4.3 ± 0.2	7.9 ± 0.3	10.3 ± 0.3	9.2 ± 0.4	4.1 ± 0.1	8.6 ± 0.5	4.9 ± 0.3	9.7 ± 0.4
LLP	10.2 ± 0.3	6.5 ± 0.1	7.3 ± 0.2	4.3 ± 0.3	9.5 ± 0.1	6.0 ± 0	8.6 ± 0.3	5.5 ± 0.2	7.8 ± 0.4	7.3 ± 0.4	8.0 ± 0.5	5.7 ± 0.6	9.6 ± 0.2	6.9 ± 0.1	8.2 ± 0.2	7.1 ± 0.2	8.9 ± 0	8.3 ± 0.2	11.0 ± 0.5	5.3 ± 0.2
LLO	20.3 ± 0.3	2.7 ± 0.1	4.9 ± 0.2	1.8 ± 0.1	10.4 ± 0.1	1.7 ± 0	4.4 ± 0.2	1.7 ± 0.1	7.2 ± 0.3	2.2 ± 0.2	2.6 ± 0.2	1.3 ± 0.2	9.1 ± 0.1	3.0 ± 0.1	3.4 ± 0	2.4 ± 0.1	7.8 ± 0	2.0 ± 0.1	3.3 ± 0.2	1.7 ± 0.1
LnLnP	0.6 ± 0	5.2 ± 0.2	2.8 ± 0.2	4.2 ± 0.2	3.3 ± 0	7.2 ± 0.1	3.4 ± 0.1	4.6 ± 0.1	3.9 ± 0.2	6.7 ± 0.5	4.0 ± 0.3	5.1 ± 0.6	3.5 ± 0.1	4.4 ± 0.1	3.5 ± 0.2	4.0 ± 0.2	3.5 ± 0	5.6 ± 0.1	3.4 ± 0.2	4.0 ± 0.1
OLLn	1.6 ± 0.1	3.3 ± 0.1	4.6 ± 0.2	3.2 ± 0.4	3.2 ± 0	2.9 ± 0	3.2 ± 0.3	2.7 ± 0.2	5.0 ± 0.4	3.1 ± 0.2	2.9 ± 0.2	2.5 ± 0.1	3.3 ± 0.2	4.4 ± 0.2	2.7 ± 0.1	3.1 ± 0.4	3.5 ± 0.1	2.9 ± 0.1	2.9 ± 0.2	3.1 ± 0.2
POL	5.4 ± 0.2	1.5 ± 0.1	2.1 ± 0.2	0.8 ± 0	3.0 ± 0.2	0.9 ± 0.1	2.2 ± 0.1	0.7 ± 0.1	2.5 ± 0	1.9 ± 0.1	1.7 ± 0.1	0.7 ± 0	2.8 ± 0	1.0 ± 0.1	1.1 ± 0	1.4 ± 0.1	2.5 ± 0.1	1.4 ± 0.1	2.0 ± 0.3	0.5 ± 0.1
LnLnO	0.4 ± 0	2.3 ± 0.3	2.2 ± 0.2	2.5 ± 0.2	1.0 ± 0.1	1.6 ± 0.1	1.6 ± 0.1	2.0 ± 0	1.9 ± 0.1	1.4 ± 0.1	1.8 ± 0.2	1.9 ± 0.2	1.1 ± 0.1	1.7 ± 0.1	1.5 ± 0.2	1.5 ± 0.1	1.4 ± 0.1	1.6 ± 0.2	1.8 ± 0.1	1.7 ± 0.2
PPL	0.7 ± 0.1	1.9 ± 0.1	1.2 ± 0.1	0.7 ± 0	1.5 ± 0.1	1.3 ± 0	1.8 ± 0.1	0.8 ± 0	1.5 ± 0.1	2.8 ± 0	1.8 ± 0.2	1.5 ± 0.1	1.7 ± 0.1	1.2 ± 0	1.2 ± 0	1.3 ± 0.1	1.7 ± 0	2.3 ± 0	2.4 ± 0	0.8 ± 0.1
OOL	7.2 ± 0.1	1.0 ± 0.1	1.8 ± 0.1	0.5 ± 0	3.3 ± 0.1	0.3 ± 0	1.2 ± 0.1	0.3 ± 0	2.5 ± 0.1	0.6 ± 0	1.3 ± 0.1	0.3 ± 0	2.8 ± 0.1	0.5 ± 0.1	1.0 ± 0.1	1.0 ± 0.2	2.5 ± 0.2	0.4 ± 0	0.8 ± 0	0.2 ± 0
LLS	3.7 ± 0	0.6 ± 0	0.9 ± 0	0.5 ± 0.1	2.1 ± 0	0.5 ± 0	0.9 ± 0.2	0.5 ± 0	1.4 ± 0.1	1.0 ± 0	0.8 ± 0	0.7 ± 0.1	1.9 ± 0	0.6 ± 0	0.7 ± 0.1	0.8 ± 0.1	1.7 ± 0	0.8 ± 0	1.0 ± 0.2	0.5 ± 0
LnLS	0.4 ± 0	0.9 ± 0.1	0.8 ± 0	0.9 ± 0.1	1.1 ± 0	1.1 ± 0	0.8 ± 0	0.9 ± 0	1.3 ± 0.1	1.7 ± 0.2	1.1 ± 0.1	1.2 ± 0.1	1.2 ± 0	1.0 ± 0.1	0.8 ± 0	1.0 ± 0.1	1.1 ± 0	1.3 ± 0.1	1.2 ± 0.1	1.0 ± 0
LLPo	0.5 ± 0	0.8 ± 0.1	1.3 ± 0	0.9 ± 0.1	0.8 ± 0.1	0.8 ± 0.1	1.2 ± 0	1.4 ± 0.2	0.9 ± 0	0.8 ± 0.1	0.9 ± 0	1.0 ± 0	0.8 ± 0.1	1.3 ± 0.2	0.8 ± 0	1.4 ± 0.2	0.8 ± 0	1.0 ± 0.2	0.9 ± 0.1	1.0 ± 0.1

POLn	0.3 ± 0	0.8 ± 0	0.8 ± 0	0.7 ± 0.1	0.5 ± 0	0.7 ± 0	0.7 ± 0.1	0.5 ± 0.1	0.8 ± 0.1	1.2 ± 0	0.8 ± 0	0.7 ± 0.1	0.6 ± 0.1	0.7 ± 0	0.4 ± 0.1	0.6 ± 0.1	0.7 ± 0.1	0.8 ± 0.1	0.7 ± 0	0.5 ± 0
SOLn	1.9 ± 0	0.6 ± 0.1	0.8 ± 0.1	0.3 ± 0	1.0 ± 0	0.4 ± 0	0.8 ± 0	0.3 ± 0.1	1.0 ± 0	0.8 ± 0	0.7 ± 0	0.3 ± 0	1.0 ± 0	0.3 ± 0.1	0.4 ± 0	0.5 ± 0.1	0.9 ± 0.1	0.5 ± 0.1	0.6 ± 0.2	0.2 ± 0
PPLn	0.1 ± 0	0.7 ± 0.1	0.3 ± 0	0.4 ± 0	0.7 ± 0	0.8 ± 0.1	0.4 ± 0.1	0.4 ± 0	0.8 ± 0	1.3 ± 0	0.7 ± 0.1	1.1 ± 0.1	0.7 ± 0	0.6 ± 0	0.4 ± 0	0.4 ± 0.1	0.7 ± 0	0.9 ± 0	0.6 ± 0	0.4 ± 0
OOP	1.3 ± 0.1	0.5 ± 0	0.8 ± 0	0.3 ± 0.1	0.6 ± 0	0.1 ± 0	0.7 ± 0.1	0.2 ± 0	0.4 ± 0	0.4 ± 0	1.6 ± 0.1	0.1 ± 0	0.5 ± 0	0.1 ± 0	0.3 ± 0	1.4 ± 0.2	1.0 ± 0	0.3 ± 0	0.5 ± 0.1	0.1 ± 0
OOO	1.4 ± 0	0.7 ± 0	0.7 ± 0	0.3 ± 0	0.5 ± 0	0 ± 0	0.3 ± 0	0.1 ± 0	0.4 ± 0.1	0.1 ± 0	1.5 ± 0.2	0.1 ± 0	0.5 ± 0	0.1 ± 0	0.5 ± 0.1	1.3 ± 0.1	0.9 ± 0.1	0.1 ± 0	0.3 ± 0	0 ± 0
SLO	2.2 ± 0	0.3 ± 0	0.4 ± 0.1	0.2 ± 0.1	1.0 ± 0.1	0.1 ± 0	0.5 ± 0	0.2 ± 0	0.7 ± 0	0.4 ± 0	0.4 ± 0	0.1 ± 0	0.9 ± 0	0.1 ± 0	0.3 ± 0	0.4 ± 0.1	0.8 ± 0	0.2 ± 0	0.4 ± 0.1	0.1 ± 0
PoOL	0.2 ± 0	0.6 ± 0	0.7 ± 0	0.5 ± 0.1	0.4 ± 0	0.6 ± 0	0.6 ± 0.1	0.5 ± 0.1	0.6 ± 0	0.9 ± 0.1	0.6 ± 0	0.5 ± 0	0.5 ± 0.1	0.6 ± 0	0.4 ± 0	0.6 ± 0.1	0 ± 0	0 ± 0	0 ± 0	0 ± 0
SLP	0.6 ± 0	0.4 ± 0	0.4 ± 0	0.2 ± 0	0.5 ± 0	0.2 ± 0	0.5 ± 0	0.2 ± 0	0.5 ± 0	0.8 ± 0.1	0.5 ± 0.1	0.3 ± 0	0.5 ± 0	0.2 ± 0	0.3 ± 0	0.3 ± 0.1	0.5 ± 0.1	0.5 ± 0	0.5 ± 0	0.2 ± 0
POP	0.3 ± 0	0.5 ± 0.1	1.1 ± 0.1	0.2 ± 0	0.2 ± 0	0.1 ± 0	0.6 ± 0.2	0.2 ± 0	0.2 ± 0	0.6 ± 0	0.7 ± 0	0.2 ± 0	0.2 ± 0	0.1 ± 0	0.2 ± 0	0.6 ± 0	0.3 ± 0	0.4 ± 0	0.6 ± 0	0.1 ± 0
OOLn	0.3 ± 0	0.4 ± 0	0.6 ± 0	0.3 ± 0	0.4 ± 0	0.2 ± 0	0.3 ± 0	0.2 ± 0	0.8 ± 0.1	0.3 ± 0	0.4 ± 0	0.2 ± 0	0.4 ± 0	0.3 ± 0	0.3 ± 0.1	0.4 ± 0	0.4 ± 0.1	0.2 ± 0	0.3 ± 0.2	0.1 ± 0
MLLn	0.2 ± 0	0.3 ± 0.1	0.4 ± 0	0.3 ± 0	0.4 ± 0	0.3 ± 0	0.6 ± 0.1	0.3 ± 0	0.4 ± 0	0.3 ± 0	0.5 ± 0.1	0.3 ± 0.1	0.4 ± 0	0.2 ± 0	0.5 ± 0	0.3 ± 0	0.4 ± 0	0.2 ± 0	0.4 ± 0	0.2 ± 0
PoPL	0.2 ± 0	0.5 ± 0	0.6 ± 0	0.4 ± 0	0.3 ± 0	0.4 ± 0	0.4 ± 0.1	0.4 ± 0	0.4 ± 0	0.6 ± 0.1	0.5 ± 0.1	0.5 ± 0.1	0.3 ± 0	0.4 ± 0	0.2 ± 0	0.4 ± 0.1	0 ± 0	0 ± 0	0 ± 0	0 ± 0
LLnB	0.1 ± 0	0.3 ± 0	0.4 ± 0	0.2 ± 0	0.2 ± 0	0.5 ± 0	0.2 ± 0	0.3 ± 0	0.3 ± 0	0.5 ± 0.1	0.4 ± 0	0.3 ± 0	0.2 ± 0	0.3 ± 0	0.2 ± 0	0.3 ± 0	0.2 ± 0	0.5 ± 0	0.3 ± 0	0.3 ± 0.1
MLL	0.2 ± 0	0.2 ± 0	0.4 ± 0	0.2 ± 0	0.3 ± 0	0.2 ± 0	0.5 ± 0.1	0.3 ± 0	0.3 ± 0	0.2 ± 0.1	0.3 ± 0.1	0.2 ± 0	0.2 ± 0	0.1 ± 0	0.3 ± 0	0.1 ± 0	0.3 ± 0	0.1 ± 0	0.3 ± 0.1	0.1 ± 0
POS	0.3 ± 0	0.3 ± 0.1	1.3 ± 0.1	0.3 ± 0	0.1 ± 0	0.1 ± 0	0.4 ± 0	0.1 ± 0	0.1 ± 0	0.4 ± 0	0.4 ± 0	0.1 ± 0	0.1 ± 0	0 ± 0	0.1 ± 0	0.3 ± 0	0.1 ± 0	0.2 ± 0	0.3 ± 0.1	0 ± 0
LLA	0.8 ± 0	0.2 ± 0	0.2 ± 0	0.1 ± 0	0.4 ± 0	0.2 ± 0	0.2 ± 0.1	0.1 ± 0	0.3 ± 0	0.2 ± 0	0.3 ± 0	0.1 ± 0	0.4 ± 0	0.1 ± 0	0.2 ± 0	0.2 ± 0	0.3 ± 0	0.2 ± 0	0.3 ± 0	0.1 ± 0
LLnA	0.1 ± 0	0.2 ± 0	0.2 ± 0	0.2 ± 0	0.2 ± 0	0.2 ± 0	0.2 ± 0	0.2 ± 0	0.2 ± 0	0.3 ± 0	0.2 ± 0	0.2 ± 0	0.2 ± 0	0.2 ± 0	0.2 ± 0	0.3 ± 0.1	0.2 ± 0	0.3 ± 0	0.3 ± 0	0.2 ± 0
LLB	0.2 ± 0	0.1 ± 0	0.2 ± 0	0.1 ± 0	0.2 ± 0	0.2 ± 0	0.2 ± 0	0.1 ± 0	0.2 ± 0	0.3 ± 0	0.2 ± 0	0.2 ± 0	0.2 ± 0	0.2 ± 0	0.2 ± 0	0.3 ± 0.1	0.2 ± 0	0.3 ± 0	0.3 ± 0	0.2 ± 0
OOS	0.5 ± 0	0.1 ± 0	0.2 ± 0	0.1 ± 0	0.2 ± 0	0 ± 0	0.3 ± 0	0.1 ± 0	0.2 ± 0	0.1 ± 0	0.4 ± 0	0.1 ± 0	0.2 ± 0	0 ± 0	0.2 ± 0	0.4 ± 0	0.3 ± 0	0.1 ± 0	0.2 ± 0	0 ± 0

MOL	0.1 ± 0	0.2 ± 0	0.2 ± 0	0.2 ± 0	0.2 ± 0	0.1 ± 0	0.2 ± 0	0.2 ± 0	0.3 ± 0	0.4 ± 0	0.4 ± 0.1	0.4 ± 0	0.2 ± 0	0.2 ± 0	0.2 ± 0	0.2 ± 0.1	0 ± 0	0 ± 0	0 ± 0	0 ± 0
MPL	0.1 ± 0	0.2 ± 0	0.3 ± 0.1	0.2 ± 0	0.2 ± 0	0.1 ± 0	0.3 ± 0	0.1 ± 0	0.2 ± 0	0.1 ± 0	0.3 ± 0	0.1 ± 0	0.2 ± 0	0.1 ± 0	0.3 ± 0	0.2 ± 0	0.2 ± 0	0.1 ± 0	0.3 ± 0	0.1 ± 0
LOA	0.6 ± 0	0.1 ± 0	0.2 ± 0	0.1 ± 0	0.2 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.2 ± 0	0.1 ± 0	0.2 ± 0	0 ± 0	0.3 ± 0	0 ± 0	0.2 ± 0	0.1 ± 0	0.2 ± 0	0.1 ± 0	0.1 ± 0	0 ± 0
LLG	0.3 ± 0	0.1 ± 0	0.2 ± 0	0.1 ± 0	0.2 ± 0	0.1 ± 0	0.2 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.2 ± 0	0.1 ± 0	0.1 ± 0	0.2 ± 0	0.2 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0
LLnLg	0 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.2 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.2 ± 0	0.2 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.2 ± 0	0.2 ± 0	0.1 ± 0	0.2 ± 0	0.2 ± 0	0.1 ± 0
PLA	0.2 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.2 ± 0	0.2 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.2 ± 0	0.1 ± 0	0.1 ± 0	0.2 ± 0	0 ± 0
LLLg	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0.1	0 ± 0
PBL	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0.1 ± 0	0.2 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.2 ± 0	0 ± 0
SSO	0.1 ± 0	0.2 ± 0	0.8 ± 0	0.1 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0.1 ± 0	0.1 ± 0	0 ± 0	0.1 ± 0	0 ± 0
SSL	0.2 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0 ± 0
OLB	0.1 ± 0	0.1 ± 0	0.2 ± 0	0.1 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0 ± 0
OOA	0.2 ± 0	0.1 ± 0	0.1 ± 0	0 ± 0	0.1 ± 0	0 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0 ± 0	0.1 ± 0	0 ± 0	0.1 ± 0	0 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0 ± 0	0.1 ± 0	0 ± 0
OLG	0.1 ± 0	0.1 ± 0	0.1 ± 0	0 ± 0	0.1 ± 0	0.1 ± 0	0.2 ± 0.1	0.1 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0.1 ± 0	0 ± 0	0.1 ± 0	0.1 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0
OOPo	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0.6 ± 0.1	0.1 ± 0	0.3 ± 0	0.1 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0
PLLg	0 ± 0	0 ± 0	0 ± 0.1	0 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0.1	0 ± 0
POA	0.1 ± 0	0.1 ± 0	0.3 ± 0	0.1 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0.1 ± 0	0.1 ± 0	0 ± 0	0 ± 0	0.1 ± 0	0 ± 0
MOLn	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0.1 ± 0	0.2 ± 0	0.3 ± 0	0.2 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0.1 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0
SLA	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0 ± 0
PPP	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0.1 ± 0	0.1 ± 0	0.2 ± 0	0.2 ± 0	0.1 ± 0	0.1 ± 0	0.2 ± 0.1	0 ± 0
OLLg	0.1 ±	0.1 ±	0.1 ±	0 ±	0.1 ±	0 ±	0 ±	0 ±	0 ±	0 ±	0.1 ±	0 ±	0 ±	0 ±	0 ±	0 ±	0 ±	0 ±	0.1 ±	0 ±

	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PPS	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0.1 ± 0	0 ± 0	0.2 ± 0	0.2 ± 0	0 ± 0	0 ± 0	0.1 ± 0.1	0 ± 0
POB	0 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0.1 ± 0	0.1 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0
SOA	0 ± 0	0.1 ± 0	0.1 ± 0	0.1 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0
OOB	0.1 ± 0	0.1 ± 0	0.1 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0
POPo	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0.1 ± 0.1	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0
Sum	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %
%AG/ GAL	37.4 ±0.9	3.6 ±0.1	4.8 ±0.1	4.9 ±0.2	23.3 ±1.7	14.6 ±0.6	3.2 ±0.2	4.0 ±0.1	12.5 ±1.7	14.4 ±2.1	3.4 ±0.3	16.1 ±1.9	19.9 ±0.7	21.2 ±1.6	3.6 ±0.2	3.1 ±0.1	14.0 ±0.1	20.9 ±5.9	4.5 ±0.2	30.5 ±1.4

[a]Abbreviations: see S-Table 1.
[b]Samples analyzed in triplicate unless labeled as being duplicate runs, indicated by asterisk.
[c]Values of 0% indicate <0.05%.

Supporting Table 14. Diacylglycerol (DAG) percent relative compositions by HPLC-APPI-MS for lipid extracts of greenhouse grown and growlight-treated romaine and Lolla Rossa, green- and red-leaf lettuce, respectively. Abbreviations: see S-Table 1. Samples analyzed in triplicate unless labeled as being duplicate runs, indicated by asterisk *. Values of 0% indicate <0.05%.

	Greenhouse				L1				L2				L3				L4			
	Romaine		Lolla Rossa		Romaine		Lolla Rossa		Romaine		Lolla Rossa		Romaine		Lolla Rossa		Romaine		Lolla Rossa	
DAG	3 Wk	8 Wk	3 Wk	8 Wk	3* Wk	8* Wk	3* Wk	8 Wk	3 Wk	8 Wk	3 Wk	8 Wk	3 Wk	8 Wk	3 Wk	8 Wk	3* Wk	8 Wk	3* Wk	8 Wk
PL2[a]	17.8 ± 0.9	45.6 ± 2.0	43.8 ± 1.1	46.2 ± 1.1	31.7[b] ± 2.1	47.6 ± 2.6	43.9 ± 0.7	52.5 ± 0.7	35.5 ± 0.7	45.1 ± 2.9	45.6 ± 1.4	49.4 ± 1.9	35.2 ± 0.4	50.4 ± 0.9	46.0 ± 0.1	47.9 ± 1.5	30.3 ± 1.0	36.0 ± 1.7	36.4 ± 0.8	47.3 ± 2.7
PL1	11.1 ± 0.4	13.3 ± 0.6	15.7 ± 2.5	14.5 ± 0.6	14.6 ± 0.5	12.6 ± 1.5	20.4 ± 0.2	12.3 ± 1.6	12.2 ± 0.7	9.9 ± 1.3	18.0 ± 0.5	9.0 ± 1.2	13.3 ± 1.5	14.2 ± 1.3	17.7 ± 1.1	13.7 ± 1.4	11.9 ± 0.6	11.6 ± 1.0	17.5 ± 0.1	8.1 ± 0.6
LL1	15.6 ± 2.0	9.8 ± 1.2	9.4 ± 1.2	8.4 ± 0.2	12.0 ± 0.4	9.8 ± 0.6	9.7 ± 0.8	8.4 ± 0.2	12.1 ± 0.5	9.3 ± 0.6	8.8 ± 0.5	8.4 ± 1.4	10.7 ± 0.8	7.7 ± 0.6	9.2 ± 0.7	9.0 ± 0	11.9 ± 0.3	6.8 ± 0.4	9.0 ± 0.2	8.9 ± 1.0
PLn2	1.5 ± 0.1	7.1 ± 0.3	4.9 ± 0.4	8.2 ± 0.2	4.8 ± 0.7	8.9 ± 1.3	5.2 ± 0.4	7.5 ± 1.4	5.8 ± 0.5	9.2 ± 0.1	5.8 ± 0.3	10.2 ± 0.8	4.5 ± 0.2	6.9 ± 1.2	4.6 ± 0.2	6.8 ± 0.6	4.9 ± 0.4	5.8 ± 0.5	5.3 ± 0.2	8.0 ± 0.4
OL2	13.5 ± 0.6	4.8 ± 0.2	6.5 ± 0.6	3.2 ± 0.2	7.6 ± 0.2	5.2 ± 0.5	4.5 ± 0.5	3.3 ± 0.3	7.9 ± 0.8	4.9 ± 0.5	4.7 ± 0.6	3.2 ± 0.1	7.8 ± 0.2	4.2 ± 0.8	4.2 ± 0.4	4.4 ± 0.4	7.1 ± 0.7	3.6 ± 0.1	3.6 ± 0.1	3.3 ± 0.2
SL2	4.8 ± 0.1	2.7 ± 0.4	3.2 ± 0.3	3.6 ± 0.4	5.8 ± 1.5	4.2 ± 0.4	3.3 ± 0.5	4.0 ± 0.3	5.6 ± 0.6	4.9 ± 0.7	3.4 ± 0.3	4.0 ± 1.9	6.4 ± 0.3	3.3 ± 0.6	3.7 ± 0.1	3.6 ± 0.6	4.5 ± 0.2	2.9 ± 0.5	2.8 ± 0.4	3.4 ± 0.7
OP2	4.1 ± 0.6	3.2 ± 0.2	4.9 ± 0.7	3.4 ± 0.2	3.6 ± 1.0	3.4 ± 0.5	3.4 ± 0.2	2.8 ± 0.4	3.9 ± 1.3	3.7 ± 0.3	3.5 ± 0.6	4.7 ± 0.6	3.4 ± 0.2	3.0 ± 0.1	3.5 ± 0.4	3.1 ± 0.5	2.5 ± 0.3	2.7 ± 0.4	2.8 ± 0.2	2.9 ± 0.2
OL1	13.8 ± 1.3	1.7 ± 0.4	2.1 ± 0.2	1.8 ± 0.2	7.2 ± 1.3	1.3 ± 0.2	2.3 ± 0.1	1.0 ± 0.2	3.8 ± 0.5	1.3 ± 0.2	1.4 ± 0.2	1.1 ± 0.4	5.0 ± 0.3	0.9 ± 0.2	1.8 ± 0.8	1.8 ± 0.4	5.5 ± 1.2	1.4 ± 0.4	1.8 ± 0.3	0.7 ± 0.1
PLn1	0.8 ± 0.1	3.0 ± 0.6	1.6 ± 0.4	3.4 ± 0.5	1.8 ± 0.2	2.1 ± 0.6	2.3 ± 0.3	2.2 ± 0.4	1.7 ± 0.4	3.1 ± 1.0	2.1 ± 0.2	2.2 ± 0.3	1.7 ± 0.3	2.0 ± 0.5	2.4 ± 0.5	2.6 ± 1.2	2.0 ± 0.1	1.9 ± 0.4	2.3 ± 0.5	1.6 ± 0.2
PoO1	0[c] ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	7.2 ± 1.6	14.9 ± 0.8	9.6 ± 1.8	6.4 ± 3.1
SL1	3.5 ± 0.1	1.2 ± 0.4	1.3 ± 0.1	1.3 ± 0.3	2.4 ± 0.1	0.7 ± 0.2	1.1 ± 0.1	0.9 ± 0.1	3.3 ± 0.9	1.7 ± 0.5	1.4 ± 0.5	2.3 ± 1.5	2.2 ± 0.3	0.6 ± 0.4	0.9 ± 0.2	0.7 ± 0.2	1.7 ± 0.1	1.0 ± 0.4	1.0 ± 0	1.7 ± 0.7
OLn1	1.1 ± 0.1	2.5 ± 0.2	1.7 ± 0.1	1.7 ± 0.1	1.3 ± 0.5	1.5 ± 0.9	1.1 ± 0.3	1.8 ± 0.2	1.5 ± 0.3	2.0 ± 0.2	1.0 ± 0	1.3 ± 0.1	1.5 ± 0.4	1.6 ± 0.3	1.1 ± 0.3	1.3 ± 0.2	1.3 ± 0.1	1.3 ± 0.2	0.9 ± 0.2	1.4 ± 0.4
LL2	1.1 ± 0.1	2.5 ± 0.2	1.7 ± 0.1	1.7 ± 0.1	1.3 ± 0.5	1.5 ± 0.9	1.1 ± 0.3	1.8 ± 0.2	1.5 ± 0.3	2.0 ± 0.2	1.0 ± 0	1.3 ± 0.1	1.5 ± 0.4	1.6 ± 0.3	1.1 ± 0.3	1.3 ± 0.3	1.3 ± 0.1	1.3 ± 0.2	0.9 ± 0.2	1.4 ± 0.4
OP1	3.1 ± 0.5	1.0 ± 0.2	1.3 ± 0.4	1.1 ± 0.4	2.1 ± 0.5	0.7 ± 0.3	1.0 ± 0.2	0.8 ± 0.2	2.1 ± 0.3	1.3 ± 0.5	1.4 ± 0.3	1.2 ± 0.1	2.1 ± 0.1	1.0 ± 0.3	1.3 ± 0.3	1.1 ± 0.2	1.8 ± 0	0.7 ± 0.1	1.1 ± 0.2	0.7 ± 0.1
OO2	3.9 ± 0.2	0.8 ± 0.1	1.1 ± 0.1	0.9 ± 0.3	1.6 ± 0.2	0 ± 0	0 ± 0	0 ± 0	1.9 ± 0.6	1.0 ± 0.1	0.9 ± 0.1	1.0 ± 0.1	1.6 ± 0.2	0.6 ± 0.1	0.7 ± 0.2	0.7 ± 0.2	1.9 ± 0.8	0.5 ± 0.1	0.5 ± 0.1	0.6 ± 0.2

PoO2	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	2.4 ± 1.7	7.0 ± 2.0	4.5 ± 1.2	3.3 ± 0.7
OO1	4.0 ± 0.3	0.4 ± 0.1	0.6 ± 0.1	0.4 ± 0.1	2.0 ± 0.2	0.3 ± 0.4	0.4 ± 0.6	0.4 ± 0.3	1.0 ± 0.2	0.5 ± 0.2	0.6 ± 0.1	0.5 ± 0.3	1.5 ± 0.1	0.4 ± 0.2	0.6 ± 0.2	0.7 ± 0.1	1.8 ± 0.2	0.4 ± 0	0.3 ± 0	0.2 ± 0.1
OLn2	0.2 ± 0.1	0.3 ± 0.2	0.2 ± 0.1	0.2 ± 0	0.3 ± 0.2	0.3 ± 0.3	0.3 ± 0.1	0.2 ± 0.1	0.2 ± 0.1	0.3 ± 0.3	0.3 ± 0.1	0.2 ± 0.2	1.5 ± 0.4	1.8 ± 0.1	1.3 ± 0.6	1.5 ± 0.4	0.1 ± 0	0.1 ± 0.1	0 ± 0	0.2 ± 0.1
Sum	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %
DAG/ TAG	5.8 ± 0.3%	26.0 ± 1.1%	24.1 ± 1.1%	19.6 ± 1.4%	4.7 ± 0.2%	7.5 ± 0.2%	30.2 ± 1.0%	27.1 ± 0.7%	5.8 ± 1.2%	6.9 ± 1.1%	28.0 ± 4.0%	8.0 ± 1.0%	4.3 ± 0.1%	7.4 ± 0.3%	23.6 ± 0.9%	31.2 ± 1.8%	6.4 ± 0.3%	9.3 ± 1.3%	32.5 ± 0.9%	6.3 ± 0.6%

[a]Abbreviations: see S-Table 1.

[b]Samples analyzed in triplicate unless labeled as being duplicate runs, indicated by asterisk.

[c]Values of 0% indicate <0.05%.

Supporting Table 15. α-Tocopherol and γ-tocopherol compositions by APCI-MS for romaine and Lolla Rossa lettuce samples under greenhouse and four lighting treatments by APCI-MS selected reaction monitoring (SRM) and selected ion monitoring (SIM) approaches.

α-Tocopherol in ug/g FW										
	Greenhouse		L1		L2		L3		L4	
	Romaine	Lolla Rossa	Romaine	Lolla Rossa	Romaine	Lolla Rossa	Romaine	Lolla Rossa	Romaine	Lolla Rossa
3 Week (SRM)	3.4 ± 0.3	3.4 ± 0.3	5.9 ± 1.5	5.7 ± 1.0	10.3 ± 0.4	5.1 ± 0.1	7.1 ± 3.0	2.8 ± 1.4	0.8 ± 0.4	3.0 ± 1.4
8 Week (SRM)	3.2 ± 0.6	9.9 ± 0.7	5.5 ± 0.4	6.8 ± 1.3	15.3 ± 0.1	14.0 ± 0.8	2.9 ± 0.0	1.0 ± 0.0	6.1 ± 1.8	9.7 ± 3.4
	$r^2 = 0.9985$		$r^2 = 0.9980$		$r^2 = 0.9995$		$r^2 = 0.9968$		$r^2 = 0.9952$	
3 Week (SIM)	3.2 ± 0.3	3.3 ± 0.2	5.4 ± 0.8	5.5 ± 0.3	10.5 ± 0.3	5.1 ± 0.4	6.9 ± 2.4	2.7 ± 1.2	0.9 ± 0.2	3.1 ± 1.2
8 Week (SIM)	3.1 ± 0.5	9.6 ± 0.7	5.2 ± 0.6	6.8 ± 0.6	14.1 ± 1.1	13.3 ± 0.1	2.6 ± 0.0	1.0 ± 0.0	6.0 ± 1.6	8.8 ± 1.2
	$r^2 = 0.9999$		$r^2 = 0.9911$		$r^2 = 0.9980$		$r^2 = 0.9981$		$r^2 = 0.9907$	
γ-Tocopherol in ug/g FW										
	Greenhouse		L1		L2		L3		L4	
	Romaine	Lolla Rossa	Romaine	Lolla Rossa	Romaine	Lolla Rossa	Romaine	Lolla Rossa	Romaine	Lolla Rossa
3 Week (SRM)	14.8 ± 0.3	2.2 ± 0.0	7.9 ± 1.5	3.2 ± 0.4	7.3 ± 0.2	3.1 ± 0.2	8.9 ± 0.0	5.9 ± 0.1	0.8 ± 0.3	1.7 ± 0.6
8 Week (SRM)	3.6 ± 0.2	2.7 ± 0.1	5.1 ± 0.7	1.9 ± 0.4	7.3 ± 0.1	7.1 ± 0.1	10.7 ± 0.0*	1.8 ± 0.0*	4.4 ± 0.6	1.8 ± 1.0
	$r^2 = 0.9964$		$r^2 = 0.9804$		$r^2 = 0.9869$		$r^2 = 0.8613$		$r^2 = 0.9696$	
3 Week (SIM)	13.4 ± 0.3	1.9 ± 0.0	6.8 ± 0.6	2.4 ± 0.1	5.8 ± 0.0	2.3 ± 0.0	7.9 ± 0.2	4.9 ± 0.3	0.6 ± 0.0	1.1 ± 0.3
8 Week (SIM)	3.3 ± 0.1	2.4 ± 0.1	4.7 ± 0.4	1.5 ± 0.1	5.4 ± 0.1	5.6 ± 0.5	9.1 ± 0.0*	1.3 ± 0.0*	2.7 ± 1.6	2.5 ± 0.7
	$r^2 = 0.9983$		$r^2 = 0.9386$		$r^2 = 0.9781$		$r^2 = 0.9084$		$r^2 = 0.9326$	

[a]Footnote.

[b]Values of 0% indicate <0.05%.

*Singlicate analysis, statistical treatment not possible.

Supporting Table 16. Limits of detection (LOD) and quantification (LOQ) for α-Tocopherol and γ-tocopherol compositions by APCI-MS for romaine and Lolla Rossa lettuce samples under greenhouse and four lighting treatments by APCI-MS selected reaction monitoring (SRM) and selected ion monitoring (SIM) approaches.

		Greenhouse		L1		L2		L3		L4	
		α-toco pherol	γ-toco pherol	α-toco pherol	γ-toco pherol	α-toco pherol	γ-toco pherol	α-toco pherol	γ-toco pherol	α-toco pherol	γ-toco pherol
Romaine SRM	LOD	0.3	0.5	0.4	1.1	0.2	0.8	0.6	4.0	0.5	1.4
Lola Rossa SRM	LOQ	1.0	1.6	1.2	3.7	0.6	2.8	1.9	13.4	1.8	4.6
	r^2	0.9985	0.9964	0.9980	0.9804	0.9995	0.9869	0.9968	0.8613	0.9952	0.9696
Romaine SIM	LOD	0.1	0.3	0.7	2.0	0.3	1.1	0.4	3.2	0.8	2.1
Lolla Rossa SIM	LOQ	0.2	1.1	2.4	6.6	1.1	3.7	1.5	10.6	2.5	7.0
	r^2	0.9999	0.9983	0.9911	0.9386	0.9980	0.9781	0.9981	0.9084	0.9907	0.9326

Supporting Table 17. Literature values in μg/g FW (fresh weight) converted from original values if not originally in those units.

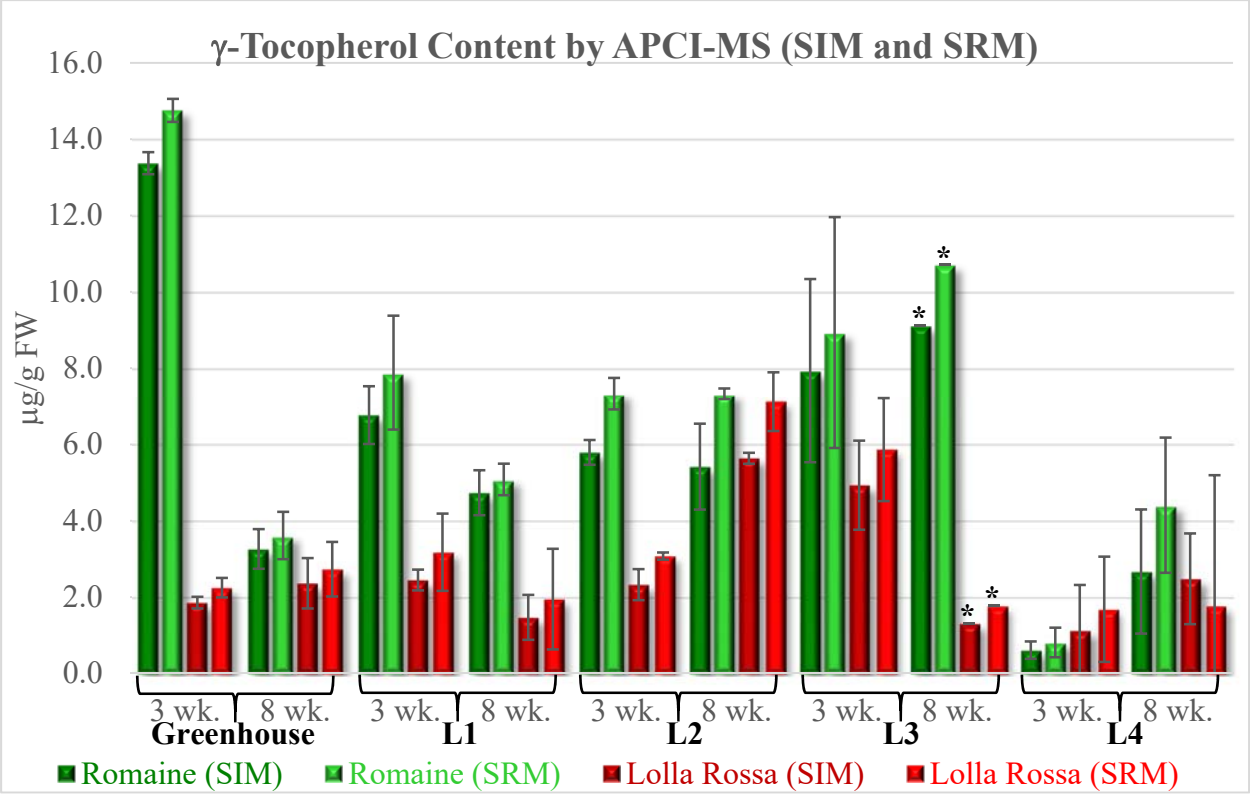
		α-Tocopherol			γ-tocopherol				
Literature Reference	Lettuce, Sample	μg/g FW		SD	μg/g FW		SD	Orig. Units	Method
Zhou et al., 2009[a,b]	LL	99.06	±	4.31				μmol/g FW	HPLC-UV, FLD
	ML	189.51	±	8.61					
	HL	254.12	±	12.92					
Chun et al., 2006	Iceburg	2.2	±	1.0	1.1	±	0.9	mg/100g FW	HPLC-UV, FLD
	Butterhead	2.3	±	1.2	2.7	±	0.9		
	Leaf	3.1	±	0.0	7.4	±	0.0		
	Romaine	5.5	±	0.0	3.6	±	0.0		
	Unspecified	1.8	±	1.3	3.1	±	1.4		
Cruz et al., 2014	Butterhead -0%	17.30	±	5.00	14	±	3.5	mg/100g FW	HPLC-UV, FLD
	2.5% fr. coffee gnd.	18.50	±	2.40	17.6	±	6.2		
	5% fr. coffee gnd.	21.60	±	1.50	15.9	±	2		
Santos et al., 2012	Green Lettuce- 1 Day	0.00	±	0.00				mg/100g FW	HPLC-UV, FLD
	10 Day	0.00	±	0.00					
	Ruby Red - 1 Day	10.00	±	1.00					
	10 Day	6.00	±	0.00					
Cruz et al., 2013	Butterhead	3.40	±	0.06	6.25	±	0.21	μg/100g FW	HPLC-UV, FLD
	Green Leaf	1.47	±	0.04	5.11	±	0.24		
	Red Leaf	3.64	±	0.05	4.93	±	0.14		
Szymanska et al., 2008	Lettuce (outer leaf)	16.20	±	0.10	5.994	±	0.2916	μg/g FW	HPLC-UV, FLD
	middle leaf	5.10	±	1.10	3.825	±	0.816		
	central leaf	8.50	±	0.60	3.4	±	0.425		
	November	α-Toco		β-Toco	γ-Toco		δ-Toco		
Samuoliene et al., 2012	Light green 'Multi blond 2' HPS	0.83	±	0.02	6.13	±	0.34	μg/g FW	HPLC-UV, FLD
	HPS + 455 nm	1.82	±	0.08	8.77	±	0.30		
	HPS + 470 nm	1.40	±	0.04	5.89	±	0.27		
	HPS + 505 nm	1.96	±	0.13	7.97	±	0.24		
	HPS + 535 nm	1.44	±	0.05	7.22	±	0.43		
	Green 'Multi green 3' HPS	2.07	±	0.04	5.04	±	0.29		
	HPS + 455 nm	3.07	±	0.09	7.37	±	0.32		
	HPS + 470 nm	2.25	±	0.08	5.97	±	0.34		
	HPS + 505 nm	3.02	±	0.09	7.40	±	0.42		

HPS + 535 nm	2.74	±	0.07	6.00	±	0.42
Red ‘Multired 4’ HPS	1.38	±	8.31	0.75	±	0.38
HPS + 455 nm	2.35	±	3.74	6.45	±	0.16
HPS + 470 nm	1.44	±	0.04	8.69	±	0.35
HPS + 505 nm	3.38	±	0.17	17.85	±	0.43
HPS + 535 nm	2.57	±	0.08	12.73	±	0.43
January						
Light green ‘Multi blond 2’ HPS	0.08	±	0.00	2.42	±	0.09
HPS + 455 nm	0.16	±	0.00	2.72	±	0.08
HPS + 470 nm	0.26	±	0.00	3.41	±	0.10
HPS + 505 nm	0.12	±	0.00	2.37	±	0.09
HPS + 535 nm	0.07	±	0.00	1.82	±	0.07
Green ‘Multi green 3’ HPS	0.21	±	0.00	1.81	±	0.10
HPS + 455 nm	0.14	±	0.00	1.52	±	0.11
HPS + 470 nm	0.32	±	0.00	1.29	±	0.08
HPS + 505 nm	0.10	±	0.00	1.22	±	0.09
HPS + 535 nm	0.04	±	0.00	0.98	±	0.09
Red ‘Multired 4’ HPS	0.29	±	0.01	5.33	±	0.16
HPS + 455 nm	1.88	±	0.01	13.58	±	0.33
HPS + 470 nm	2.06	±	0.01	10.87	±	0.29
HPS + 505 nm	0.26	±	0.01	7.17	±	0.22
HPS + 535 nm	2.54	±	0.02	12.49	±	0.25
March						
Light green ‘Multi blond 2’ HPS	0.30	±	0.00	4.42	±	0.12
HPS + 455 nm	0.39	±	0.00	7.36	±	0.15
HPS + 470 nm	0.27	±	0.00	4.44	±	0.13
HPS + 505 nm	0.69	±	0.00	7.25	±	0.20
HPS + 535 nm	0.31	±	0.00	5.32	±	0.32
Green ‘Multi green 3’ HPS	0.23	±	0.00	0.83	±	0.07
HPS + 455 nm	0.06	±	0.00	0.69	±	0.07
HPS + 470 nm	0.20	±	0.00	0.84	±	0.07
HPS + 505 nm	0.05	±	0.00	0.84	±	0.06
HPS + 535 nm	0.17	±	0.00	1.00	±	0.07
Red ‘Multired 4’ HPS	0.12	±	0.00	3.28	±	0.08
HPS + 455 nm	0.13	±	0.00	4.89	±	0.11

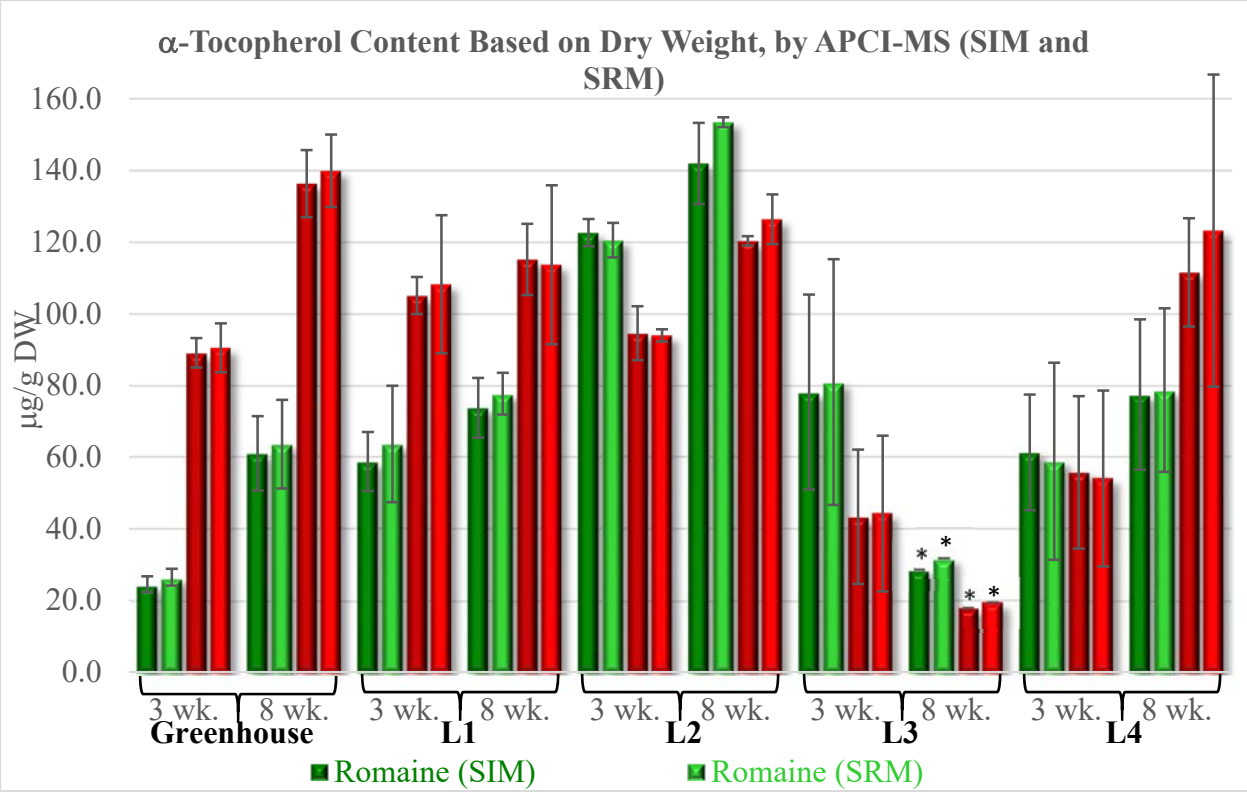
	HPS + 470 nm	0.42	±	0.00	6.05	±	0.14		
	HPS + 505 nm	0.05	±	0.00	3.43	±	0.10		
	HPS + 535 nm	0.34	±	0.00	5.33	±	0.11		
		~α-Toco[c]		~β-Toco	~γ-Toco		~δ-Toco		
Yabuta et al., 2013	Wild Type	4.2		0.7	8.0		3.0	µg/g FW	HPLC-UV, FLD
	pLTC-1	4.6		1.1	12.4		3.3	(manual	
	pLTC-3	5.0		0.9	10.6		2.5	from	
	pLTC-8	4.8		1.0	12.6		2.2	graph)	
		α-Tocopherol			γ-tocopherol				
		µg/g FW		SD	µg/g FW		SD		
Samuoliene et al., 2013	Baby Leaf- Basal	0.86	±	0.01	8.54	±	0.16	µg/g FW	HPLC-UV, FLD
	Basal + UV	0.31	±	0.00	7.30	±	0.08		
	Basal + G	0.59	±	0.01	8.05	±	0.18		
	Basal + Y	0.37	±	0.01	8.12	±	0.13		
	Basal + O	0.40	±	0.01	7.33	±	0.10		
	HPS	1.70	±	0.07	8.06	±	0.24		
	HPS + 455 nm	2.40	±	0.08	9.12	±	0.18		
	HPS + 470 nm	1.61	±	0.01	6.54	±	0.14		
	HPS + 505 nm	1.57	±	0.02	7.89	±	0.07		
	HPS + 530 nm	1.59	±	0.01	7.17	±	0.13		
	Short-Term HPS	0.79	±	0.02	206.11	±	3.21		
	Short-Term HPS + 638 nm	11.60	±	0.08	216.93	±	2.16		
Saini et al., 2016	Green Romaine - 0 deg	12.02	±	1.27	11.55	±	0.98	µg/g FW	HPLC-UV, FLD
	Red Romaine - 0 deg	8.16	±	0.92	12.60	±	1.07		
Saini et al., 2016	Green Romaine	7.10	±	0.24	9.71	±	0.33	µg/g FW	HPLC-UV, FLD
	Red Romaine	14.00	±	0.71	9.78	±	0.15		
	Batavian Lettuce	28.00	±	0.76	19.68	±	0.45		
Paradiso et al., 2018	Bionda ta taglio (LB)	44.66	±	9.48				µg/g FW	HPLC-UV, FLD
		~α-Toco[c]			~γ-Toco				
Lizarazo et al., 2010	Green Romaine, 1 Day	3.7			6.8			µg/g DW	HPLC-UV, FLD
	Green Romaine, 3 Day	4.3			5.5			(manual	
	Green Romaine, 6 Day	10.7			10.0			from	
	Green Romaine, 13 Day	15.9			17.1			graph)	
	WT	9.2			8.5				

M1	12.8	13.7
M2	16.5	15.9
M3	13.1	16.3
M4	17.8	13.8

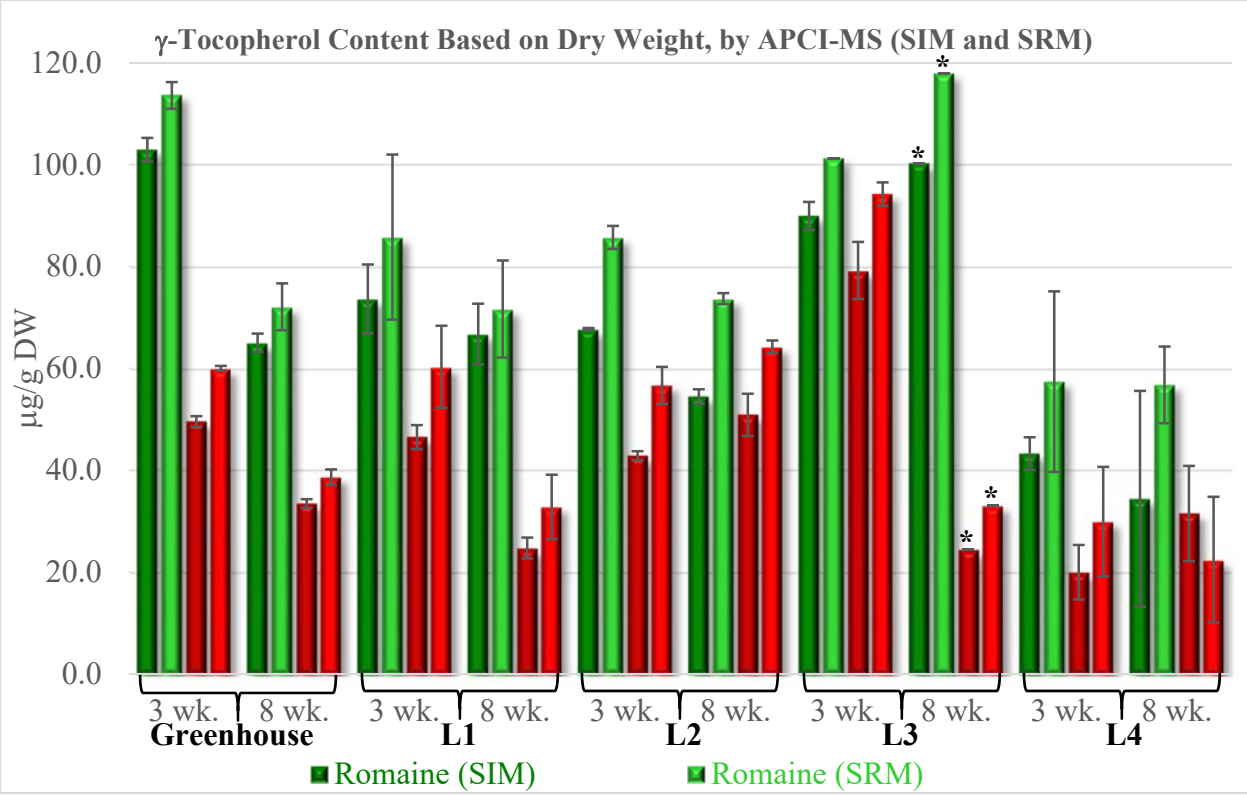
[a]Full reference given in accompanying article.
[b]The results in this reference seem to be outliers compared to other results, and were in unusual units.
[c]Approximation based on manual measurement of an enlarged published graph.



Supporting Figure 1. γ-Tocopherol content by APCI-MS SIM and SRM. Romaine lettuce colored in green and Lolla Rossa lettuce in red, each by greenhouse and four different light treatments. *Singlicate analysis, no statistical treatment possible; for reference only.



Supporting Figure 2. α-Tocopherol content based on dry (lyophilized) weight, by APCI-MS SIM and SRM. Romaine lettuce colored in green and Lolla Rossa lettuce in red, each by greenhouse and four different light treatments. *Singlicate analysis, no statistical treatment possible; for reference only.



Supporting Figure 3. γ-Tocopherol content based on dry weight (lyophilized), by APCI-MS SIM and SRM. Romaine lettuce colored in green and Lolla Rossa lettuce in red, each by greenhouse and four different light treatments. *Singlicate analysis, no statistical treatment possible; for reference only.