

Supplemental Table 1: Statistical results of correlation analysis for TOC, TN, THAA, and PLFA concentrations. (r: Pearson correlation; p: P-value) “Treat.” = treatment

Treat.	Stat.	TOC vs. THAA vs. PLFA vs. THAA vs. THAA vs.
		TN TOC TOC TN PLFA
Light	r	0.962 0.822 0.595 0.865 0.580
	p	< 0.0001 < 0.0001 0.006 < 0.0001 0.007
Macro	r	0.954 0.661 0.499 0.761 0.698
	p	< 0.0001 0.004 0.03 < 0.0001 0.005
Dark	r	0.984 0.808 0.625 0.866 0.804
	p	< 0.0001 < 0.0001 0.002 < 0.0001 < 0.0001

Supplemental Table 2: Composition as mole percent (%) for individual amino acids of THAA. Values represent mean (SE), $n = 4$. See Table 1 for amino acid abbreviations. “Treat.” = treatment

Treat.	Day	D-Ala	L-Ala	Thr+Val	Gly	Ile	Leu	Pro	Asp	L-Glu	Phe	Lys
Light	-1	0.92 (0.01)	13.55 (0.36)	6.89 (0.01)	26.49 (0.97)	3.46 (0.06)	6.03 (0.03)	7.89 (0.03)	15.62 (0.04)	12.03 (0.06)	1.87 (1.29)	5.26 (0.10)
	1	0.84 (0.04)	14.49 (0.09)	6.71 (0.25)	26.51 (0.81)	3.44 (0.1)	6.35 (0.18)	7.53 (0.13)	14.13 (0.26)	11.87 (0.29)	2.69 (0.11)	5.44 (0.15)
	3	0.82 (0.09)	13.59 (0.74)	6.83 (0.26)	23.62 (1.46)	3.17 (0.11)	7.13 (0.38)	7.46 (0.43)	16.05 (1.43)	12.36 (0.62)	3.23 (0.28)	5.75 (0.74)
	7	0.69 (0.03)	14.76 (0.26)	7.38 (0.40)	24.57 (1.44)	3.74 (0.25)	7.06 (0.56)	8.44 (0.65)	13.40 (0.3)	11.38 (1.19)	2.77 (0.25)	5.80 (0.36)
	14	0.70 (0.03)	15.56 (0.39)	7.46 (0.34)	23.46 (0.61)	4.12 (0.12)	7.94 (0.24)	8.04 (0.36)	11.88 (1.22)	11.34 (0.44)	3.26 (0.14)	6.24 (0.42)
	21	0.58 (0.04)	14.01 (0.69)	7.40 (0.26)	22.15 (1.20)	3.88 (0.07)	7.49 (0.16)	8.24 (0.34)	13.38 (0.81)	13.29 (0.88)	3.13 (0.10)	6.44 (0.48)
	42	0.71 (0.04)	14.82 (0.35)	7.62 (0.17)	22.65 (0.46)	4.10 (0.08)	7.88 (0.18)	7.73 (0.23)	13.85 (0.56)	11.51 (0.42)	3.21 (0.11)	5.93 (0.47)
Macro	-1	0.92 (0.01)	13.55 (0.36)	6.89 (0.01)	26.49 (0.97)	3.46 (0.06)	6.03 (0.03)	7.89 (0.03)	15.62 (0.04)	12.03 (0.06)	1.87 (1.29)	5.26 (0.10)
	1	0.80 (0.00)	14.18 (0.16)	6.53 (0.15)	24.66 (0.05)	3.54 (0.01)	6.65 (0.01)	7.49 (0.12)	15.21 (0.13)	12.57 (0.23)	2.92 (0.09)	5.46 (0.04)
	3	0.70 (0.06)	13.29 (0.27)	6.77 (0.18)	24.86 (0.79)	3.61 (0.15)	8.04 (0.14)	6.78 (1.67)	16.23 (2.34)	11.95 (0.57)	3.25 (0.32)	4.52 (1.26)
	7	0.75 (0.02)	15.63 (0.48)	6.50 (0.92)	24.65 (0.21)	3.55 (0.06)	7.15 (0.06)	8.10 (0.11)	13.43 (0.87)	11.91 (0.57)	3.00 (0.16)	5.34 (0.11)
	14	0.82 (0.05)	15.35 (0.12)	7.49 (0.23)	25.14 (1.25)	3.67 (0.03)	6.94 (0.31)	7.75 (0.04)	13.49 (0.15)	11.20 (0.50)	2.89 (0.11)	5.25 (0.15)
	21	0.60 (0.04)	14.23 (0.50)	7.93 (0.11)	21.46 (0.44)	4.20 (0.07)	8.29 (0.02)	7.75 (0.14)	14.20 (1.07)	12.41 (0.35)	3.33 (0.14)	5.60 (0.15)
	42	0.79 (0.09)	13.59 (0.13)	7.55 (0.03)	22.91 (0.54)	3.53 (0.08)	7.13 (0.30)	6.95 (0.15)	16.94 (0.30)	12.28 (0.30)	3.17 (0.16)	5.14 (0.43)
Dark	-1	0.90 (0.01)	13.19 (0.36)	6.90 (0.01)	25.52 (0.97)	3.52 (0.06)	6.00 (0.03)	7.91 (0.03)	15.58 (0.04)	11.97 (0.06)	3.16 (1.29)	5.36 (0.10)
	1	0.90 (0.01)	14.11 (0.09)	6.65 (0.20)	26.21 (0.74)	3.42 (0.11)	6.16 (0.06)	7.67 (0.19)	14.77 (0.49)	11.83 (0.32)	3.21 (0.11)	5.08 (0.15)
	3	0.74 (0.15)	11.45 (2.08)	5.77 (0.70)	22.21 (2.61)	2.91 (0.10)	6.39 (0.19)	7.34 (0.32)	21.22 (2.92)	14.61 (2.17)	3.24 (1.03)	4.11 (0.41)
	7	0.97 (0.03)	14.59 (0.24)	7.28 (0.14)	25.43 (0.41)	3.43 (0.11)	6.44 (0.18)	8.01 (0.21)	13.78 (0.55)	11.39 (0.81)	2.88 (0.07)	5.79 (0.28)
	14	1.00 (0.05)	15.04 (0.29)	6.36 (0.73)	27.48 (0.67)	3.37 (0.12)	6.21 (0.30)	7.90 (0.19)	13.64 (0.73)	10.64 (0.44)	2.78 (0.18)	5.60 (0.20)
	21	0.94 (0.06)	13.30 (0.37)	6.86 (0.27)	26.53 (0.39)	3.55 (0.21)	6.23 (0.10)	8.40 (0.48)	14.52 (0.75)	11.53 (0.32)	2.78 (0.13)	5.37 (0.16)
	42	1.03 (0.04)	13.40 (0.43)	7.20 (0.09)	26.10 (0.52)	3.47 (0.11)	6.88 (0.24)	7.23 (0.43)	14.77 (0.93)	11.17 (0.38)	3.30 (0.22)	5.45 (0.26)

Supplemental Table 3: Concentrations of groups of or individual PLFA. Units are $\mu\text{g FA gdw}^{-1}$. Values represent mean (SE). $n = 4$ except for Day -1 ($n = 1$). SatFA: saturated fatty acids; MUFA: monounsaturated fatty acids; PUFA: polyunsaturated fatty acids; BrFA: branched odd- and even- fatty acids. See Table 1 for individual fatty acid nomenclature. “Treat.” = treatment

Treat.	Day	SatFA	MUFA	PUFA	BrFA	16:1 ω 7	18:2 ω 6	18:4	20:4 ω 6	20:5 ω 3	22:6 ω 3
Light	-1	20.01	12.91	5.35	1.68	7.30	0.43	0.39	0.49	2.44	0.52
	1	21.58 (4.15)	12.77 (2.44)	6.57 (1.28)	1.74 (0.37)	7.58 (1.39)	0.66 (0.16)	0.40 (0.09)	0.62 (0.14)	2.60 (0.49)	0.63 (0.15)
	7	24.46 (3.17)	18.02 (3.59)	8.12 (1.30)	2.35 (0.78)	11.05 (4.83)	0.95 (0.15)	0.44 (0.05)	1.10 (0.33)	3.44 (0.61)	0.74 (0.12)
	14	26.12 (6.05)	16.97 (3.60)	8.44 (1.61)	2.21 (0.36)	10.62 (3.07)	0.99 (0.23)	0.47 (0.15)	0.93 (0.09)	2.58 (0.15)	0.61 (0.05)
	21	40.68 (1.48)	28.31 (1.27)	15.02 (1.28)	4.41 (0.24)	15.43 (1.39)	1.29 (0.13)	0.65 (0.03)	2.22 (0.39)	5.69 (0.75)	1.27 (0.22)
Macro	42	37.70 (9.10)	22.20 (5.14)	17.61 (6.95)	3.64 (0.59)	8.18 (2.49)	2.36 (1.11)	1.24 (0.61)	4.18 (2.33)	4.48 (1.06)	1.17 (0.14)
	-1	20.01	12.91	5.35	1.68	7.30	0.43	0.39	0.49	2.44	0.52
	1	14.03 (1.77)	8.59 (1.07)	4.38 (0.59)	1.35 (0.21)	4.53 (0.23)	0.45 (0.09)	0.20 (0.02)	0.52 (0.07)	1.59 (0.20)	0.38 (0.08)
	7	24.45 (4.52)	15.34 (2.33)	6.65 (1.04)	1.77 (0.14)	10.85 (1.66)	0.75 (0.08)	0.40 (0.09)	0.79 (0.10)	2.72 (0.47)	0.59 (0.14)
	14	16.03 (5.02)	10.57 (3.33)	5.27 (1.55)	1.93 (0.50)	7.08 (2.46)	0.70 (0.20)	0.24 (0.06)	0.68 (0.19)	1.80 (0.54)	0.37 (0.11)
Dark	21	15.59 (3.70)	10.17 (2.45)	5.49 (1.28)	2.32 (0.58)	4.56 (1.16)	0.45 (0.08)	0.21 (0.06)	0.98 (0.19)	1.92 (0.49)	0.51 (0.13)
	42	15.02 (3.34)	9.36 (1.93)	6.83 (1.37)	2.65 (0.11)	3.62 (1.05)	1.91 (0.07)	0.20 (0.01)	1.11 (0.30)	1.50 (0.52)	0.46 (0.14)
	-1	7.49	3.31	1.92	1.35	1.21	0.24	0.06	0.30	0.50	0.16
	1	3.65 (0.41)	2.21 (0.27)	1.34 (0.24)	0.80 (0.08)	0.73 (0.08)	0.20 (0.04)	0.03 (0.005)	0.17 (0.03)	0.36 (0.08)	0.13 (0.04)
	7	5.93 (1.00)	3.58 (0.62)	2.71 (1.15)	1.18 (0.24)	1.20 (0.13)	0.33 (0.08)	0.05 (0.01)	0.47 (0.24)	0.84 (0.40)	0.23 (0.09)
Dark	14	8.81 (3.09)	4.87 (1.49)	2.83 (0.98)	1.63 (0.53)	1.83 (0.62)	0.36 (0.16)	0.07 (0.03)	0.38 (0.14)	0.72 (0.36)	0.26 (0.17)
	21	5.80 (1.06)	3.28 (0.65)	1.55 (0.41)	1.37 (0.25)	0.87 (0.30)	0.17 (0.04)	0.01 (0.008)	0.23 (0.06)	0.32 (0.08)	0.10 (0.02)
	42	5.67 (0.84)	2.37 (0.23)	1.12 (0.14)	1.04 (0.11)	0.85 (0.08)	0.17 (0.03)	0.02 (0.01)	0.19 (0.02)	0.22 (0.02)	0.08 (0.007)

Supplemental Table 4: Concentrations of individual pigments. Units are nmol pigment gdw⁻¹. Values represent mean (SE). *n* = 4 except for Day -1 (*n* = 1). See Table 1 for pigment nomenclature. “Treat.” = treatment

Treat.	Day	Fuco	Zea + Lut	Myxo
Light	-1	0.36	0.02	0.01
	7	0.80 (0.12)	0.11 (0.05)	0.03 (0.01)
	14	0.90 (0.33)	0.08 (0.03)	0.03 (0.008)
	21	0.93 (0.93)	0.29 (0.10)	0.10 (0.04)
	42	0.77 (0.77)	0.24 (0.09)	0.05 (0.01)
Macro	-1	0.36	0.02	0.01
	7	1.63 (0.68)	0.05 (0.01)	0.04 (0.008)
	14	0.60 (0.16)	0.05 (0.01)	0.02 (0.005)
	21	1.69 (0.83)	0.66 (0.50)	0.08 (0.04)
	42	0.38 (0.10)	0.26 (0.08)	0.06 (0.02)
Dark	-1	0.36	0.02	0.01
	7	0.06 (0.009)	0.08 (0.03)	0.02 (0.005)
	14	0.05 (0.007)	0.04 (0.008)	0.01 (0.003)
	21	0.06 (0.008)	0.07 (0.005)	0.03 (0.002)
	42	0.05 (0.01)	0.08 (0.02)	0.02 (0.004)