

Article

Supplementary Materials: Effects of Individual and Simultaneous Selenium and Iodine Biofortification of Baby-Leaf Lettuce Plants Grown in Two Different Hydroponic Systems

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Table S1. Environmental parameters registered during the first experiment.

Lettuce sowing date	September 17, 2019
Transplant date	October 1, 2019
Start of treatment	October 8, 2019
Harvest date	October 18, 2019
Days of treatment	10
Mean air temperature (°C)	22.0
Mean air relative humidity (%)	72.4
Mean daily solar radiation (MJ m ⁻² day ⁻¹)	5.44
Cumulative solar radiation (MJ m ⁻²)	95.8

Table S2. Environmental parameters registered during the second experiment.

Lettuce sowing date	September 24, 2020
Transplant date	October 8, 2020
Start of treatment	October 15, 2020
Harvest date	October 25, 2020
Days of treatment	10
Mean air temperature (°C)	20.0
Mean air relative humidity (%)	75.7
Mean daily solar radiation (MJ m ⁻² day ⁻¹)	4.83
Cumulative solar radiation (MJ m ⁻²)	86.9

Table S3. Total phenols, antioxidant capacity (FRAP), total chlorophyll, carotenoid contents, measured at harvest, in leaves of lettuce plants grown in two different hydroponic systems (HS), floating (FS) and aeroponics (AE), and at different concentrations of I and Se in the nutrient solution, in the first experiment.

Hydroponic system	I added (μM)	Se added (μM)	Total phenols (mg GAE g ⁻¹ DW)	FRAP (μmol Fe (II) g ⁻¹ FW)	Chls tot (mg g ⁻¹ DW)	Car (mg g ⁻¹ DW)	NO ₃ ⁻ (mg g ⁻¹ DW)
FS	0	0	126.9	602.8	18.1	3.0	25.9
		13	111.6	513.6	16.6	3.4	28.5
	5	0	108.8	534.6	16.4	3.0	26.7
		13	166.7	683.3	22.8	4.2	25.8
A	0	0	123.8	618.1	20.6	4.6	29.0
		13	142.6	788.6	22.5	4.9	17.6
	5	0	133.7	771.3	19.6	4.5	37.7
		13	136.5	660.6	26.3	5.7	18.5
Mean effect							
FS			128.5	583.6	18.5 b	3.4 b	26.7
AE			134.1	709.6	22.2 a	4.9 a	25.7
	0		127.6	645.3	19.9	4.2	24.9
	5		136.2	673.2	21.6	4.5	27.3
		0	124.4	644.3	19.0 b	4.0 b	30.5 a
		13	139.4	674.1	22.5 a	4.7 a	21.7 b
FS	0		119.2	558.2	17.3	3.2	27.2 a
	5		137.8	609.0	19.6	3.6	26.2 ab
AE	0		133.2	703.3	21.6	4.8	23.3 b
	5		135.1	715.9	22.9	5.1	28.1 a
FS		0	117.8	568.7	17.2	3.0	26.3 b
		13	139.2	598.4	19.7	3.8	27.1 b
AE		0	128.7	694.7	20.1	4.6	33.3 a
		13	139.6	724.6	24.4	5.3	18.0 c
	0	0	125.0	612.0	19.6 b	4.0	27.8 ab
		13	130.2	678.6	20.1 ab	4.3	21.9 b
	5	0	123.7	676.6	18.3 b	3.9	33.3 a
		13	148.6	669.7	24.9 a	5.1	21.4 b
Significance							
	HS		ns	ns	*	***	ns
	I		ns	ns	ns	ns	ns
	Se		ns	ns	*	*	*
	HS × I		ns	ns	ns	ns	***
	HS × Se		ns	ns	ns	ns	*
	I × Se		ns	ns	*	ns	**
	HS × I × Se		ns	ns	ns	ns	ns

Means ($n = 3$) flanked by the same letter are not statistically different for $p = 0.05$ after Duncan's test. Significance level: *** $p \leq 0.001$; ** $p \leq 0.01$; * $p \leq 0.05$; ns = not significant.

Table S4. Total phenol, flavonoid content, antioxidant capacity (FRAP), total chlorophyll and carotenoid contents, measured at harvest, in leaves of lettuce plants grown in two different hydroponic systems (HS), floating (FS) and aeroponics (AE), and at different concentrations of I and Se in the nutrient solution, in the second experiment.

Hydroponic system	I added (μM)	Se added (μM)	Total phenols (mg GAE g ⁻¹ DW)	Flavonoids (mg catechin g ⁻¹ DW)	FRAP (μmol Fe (II) g ⁻¹ DW)	Chls tot (mg g ⁻¹ DW)	Car (mg g ⁻¹ DW)	NO ₃ ⁻ (mg g ⁻¹ DW)
FS	0	0	76.6	31.8	680.6	27.8	5.1	22.9
		13	75.3	35.9	764.8	26.6	4.1	24.4
	5	0	74.7	35.0	687.8	26.8	4.4	19.6
		13	74.8	32.0	754.1	27.2	4.7	22.5
A	0	0	73.6	29.8	695.3	21.4	4.1	20.4
		13	64.8	23.9	627.5	26.0	4.5	15.1
	5	0	65.0	26.1	576.6	22.4	4.2	21.0
		13	73.4	31.5	705.4	24.3	4.3	17.9
Mean effect								
FS			75.3	33.7	721.8	27.1	4.6	22.4 a
AE			69.2	27.8	651.2	23.5	4.3	18.6 b
	0		72.6	30.3	692.0	25.4	4.5	20.1
	5		72.0	31.2	681.0	25.2	4.4	20.1
		0	72.5	30.7	660.1	24.6	4.5	20.9
		13	72.1	30.8	712.9	26.0	4.4	19.3
FS	0		76.0	33.8	722.7	27.2	4.6	17.8
	5		74.7	33.5	720.9	27.0	4.5	19.5
AE	0		69.2	26.8	661.4	23.7	4.3	23.7
	5		69.2	28.8	641.0	23.4	4.2	21.1
FS		0	75.6	33.4	684.2	27.3	4.8	21.3 a
		13	75.0	34.0	759.5	26.9	4.4	23.5 a
AE		0	69.3	27.9	635.9	21.9	4.2	20.7 a
		13	69.1	27.7	666.4	25.2	4.4	16.5 b
	0	0	75.1	30.8	687.9	24.6	4.6	21.4
		13	70.0	29.9	696.1	26.3	4.3	18.8
	5	0	69.8	30.6	632.2	24.6	4.3	20.5
		13	74.1	31.8	729.8	25.8	4.5	19.7
Significance								
	HS		*	ns	ns	ns	ns	**
	I		ns	ns	ns	ns	ns	ns
	Se		ns	ns	ns	ns	ns	ns
	HS × I		ns	ns	ns	ns	ns	ns
	HS × Se		ns	ns	ns	ns	ns	**
	I × Se		ns	ns	ns	ns	ns	ns
	HS × I × Se		ns	ns	ns	ns	ns	ns

Means ($n = 3$) flanked by the same letter are not statistically different for $p = 0.05$ after Duncan's test. Significance level: *** $p \leq 0.001$; ** $p \leq 0.01$; * $p \leq 0.05$; ns = not significant.

Table S5. Se estimated daily intake (EDI_{Se}), Se estimated dietary intake expressed as percentage of the Se adequate intake (EDI_{Se}/AI), and health risk index (HRI) of a serving (100 g) of lettuce grown in two different hydroponic systems with different concentrations of I and Se in the nutrient solution.

Hydroponic system	I added (μM)	Se added (μM)	EDI_{Se} ($\mu g \text{ day}^{-1}$)		EDI_{Se}/AI (%)		HRI_{Se}	
			1 st exp	2 nd exp	1 st exp	2 nd exp	1 st exp	2 nd exp
FS	0	0	0.3	0.0	0.4	0.0	0.00	0.00
		13	13.3	19.0	19.0	27.2	0.04	0.06
	5	0	0.1	0.0	0.2	0.0	0.00	0.00
		13	9.9	15.8	14.2	22.6	0.03	0.05
A	0	0	0.3	0.0	0.5	0.0	0.00	0.00
		13	18.6	19.2	26.6	27.4	0.06	0.06
	5	0	0.5	0.0	0.7	0.0	0.00	0.00
		13	21.0	20.5	29.9	29.4	0.07	0.07

Table S6. I estimated daily intake (EDI_I), Se estimated dietary intake expressed as percentage of the Se adequate intake (EDI_I/AI), and health risk index (HRI) of a serving (100 g) of lettuce grown in two different hydroponic systems with different concentrations of I and Se in the nutrient solution.

Hydroponic system	I added (μM)	Se added (μM)	EDI_I ($\mu g \text{ day}^{-1}$)		EDI_I/AI (%)		HRI_I	
			1 st exp	2 nd exp	1 st exp	2 nd exp	1 st exp	2 nd exp
FS	0	0	16.5	24.5	11.0	16.4	0.03	0.041
		13	9.7	15.8	6.5	10.5	0.02	0.026
	5	0	344.7	569.1	229.8	379.4	0.57	0.949
		13	210.8	518.0	140.5	345.3	0.35	0.863
A	0	0	14.0	16.4	9.3	11.0	0.02	0.027
		13	7.0	14.4	4.6	9.6	0.01	0.024
	5	0	214.2	405.8	142.8	270.5	0.36	0.676
		13	236.3	482.0	157.5	321.3	0.39	0.803

Table S7. Weight reduction, total phenol, flavonoid content, antioxidant capacity (FRAP), chlorophyll a to b ratio (chl a/chl b), total chlorophyll and carotenoid contents, measured after 2 days of storage, in leaves of lettuce grown in two different hydroponic systems with different concentrations of I and Se in the nutrient solution.

Hydroponic system	I added (μM)	Se added (μM)	Weight reduction (%)	Total phenols (mg GAE g ⁻¹ FW)	Flavonoids (mg catechin g ⁻¹ FW)	FRAP (μmol Fe(II) g ⁻¹ FW)	chl a/chl b (mg g ⁻¹ FW)	Chls tot (mg g ⁻¹ FW)	Car (mg g ⁻¹ FW)
FS	0	0	5.00	3.02	1.29	27.3	2.68	912.4	173.2
		13	5.30	3.22	1.31	32.0	3.85	954.2	167.1
	5	0	4.10	3.09	1.49	28.5	2.81	951.9	187.1
		13	4.13	3.17	1.60	31.2	4.21	945.8	176.4
A	0	0	3.77	3.15	1.37	29.0	2.42	851.8	158.2
		13	2.83	3.04	1.27	27.3	2.77	937.6	151.9
	5	0	3.73	3.14	1.39	29.5	2.58	932.0	166.1
		13	3.97	3.19	1.37	30.4	2.84	920.9	159.8
FS			4.63 a	3.13	1.42	29.7	3.39 a	941.1	176.0
AE			3.58 b	3.13	1.35	29.1	2.65 b	910.6	159.0
0 μM I			4.23	3.11	1.31	28.9	2.93	914.0	162.6
5 μM I			3.98	3.15	1.46	29.9	3.11	937.7	172.3
0 μM Se			4.15	3.10	1.38	28.6	2.62 b	912.0	171.1
13 μM Se			4.06	3.16	1.39	30.2	3.41 a	939.6	163.8
FS	0 μM I		5.15	3.12	1.30	29.7	3.26	933.3	170.2
	5 μM I		4.12	3.13	1.54	29.8	3.51	948.8	181.7
AE	0 μM I		3.30	3.09	1.32	28.1	2.60	894.7	155.0
	5 μM I		3.85	3.16	1.38	30.0	2.71	926.5	162.9
FS	0 μM Se		4.55	3.06	1.39	27.9	2.74 b	932.1	180.1
	13 μM Se		4.72	3.20	1.46	31.6	4.03 a	950.0	171.8
AE	0 μM Se		3.75	3.14	1.38	29.3	2.50 b	891.9	162.1
	13 μM Se		3.40	3.12	1.32	28.9	2.80 b	929.2	155.8
0 μM I	0 μM Se		4.38	3.08	1.33	28.2	2.55	882.1	165.7
	13 μM Se		4.07	3.13	1.29	29.7	3.31	945.9	159.5
5 μM I	0 μM Se		3.92	3.11	1.44	29.0	2.69	941.9	176.6
	13 μM Se		4.05	3.18	1.48	30.8	3.52	933.4	168.1
Significance									
HS			*	ns	ns	ns	***	ns	ns
I			ns	ns	ns	ns	ns	ns	ns
Se			ns	ns	ns	ns	***	ns	ns
HS × I			ns	ns	ns	ns	ns	ns	ns
HS × Se			ns	ns	ns	ns	***	ns	ns
I × Se			ns	ns	ns	ns	ns	ns	ns
HS × I × Se			ns	ns	ns	ns	ns	ns	ns

Means ($n = 3$) flanked by the same letter are not statistically different for $P = 0.05$ after Duncan's test. Significance level: *** $P \leq 0.001$; ** $P \leq 0.01$; * $P \leq 0.05$; ns = not significant.

Table S8. Weight reduction, total phenol, flavonoid content, antioxidant capacity (FRAP), chlorophyll a to b ratio (chl a/chl b), total chlorophyll and carotenoid contents, measured after 4 days of storage, in leaves of lettuce grown in two different hydroponic systems with different concentrations of I and Se in the nutrient solution.

Hydroponic system	I added (μM)	Se added (μM)	Weight reduction (%)	Total phenols (mg GAE g ⁻¹ FW)	Flavonoids (mg catechin g ⁻¹ FW)	FRAP (μmol Fe(II) g ⁻¹ FW)	chl a/chl b (mg g ⁻¹ FW)	Chls tot (mg g ⁻¹ FW)	Car (mg g ⁻¹ FW)
FS	0	0	6.43	3.31	1.54	30.7	2.93 c	896.2	168.9
		13	7.63	3.26	1.61	30.2	5.90 a	963.3	167.5
	5	0	6.20	3.24	1.51	29.2	2.65 c	901.9	161.2
		13	4.67	3.39	1.46	31.9	2.75 c	917.0	168.8
A	0	0	5.27	2.93	1.29	27.3	2.83c	909.7	192.8
		13	5.73	3.24	1.51	30.9	3.62 bc	992.4	168.0
	5	0	3.83	3.19	1.49	28.5	2.65 c	954.6	167.5
		13	3.70	3.15	1.41	32.2	4.43 b	907.6	175.5
FS			6.23 a	3.30	1.53	30.5	3.56	919.6	166.6
AE			4.63 b	3.13	1.42	29.7	3.39	941.1	176.0
0 μM I			6.27 a	3.19	1.49	29.8	3.82 a	940.4	174.3
5 μM I			4.60 b	3.24	1.47	30.5	3.12 b	920.3	168.3
0 μM Se			5.43	3.17	1.46	29.0	2.77 b	915.6	172.6
13 μM Se			5.43	3.26	1.50	31.3	4.18 a	945.1	170.0
FS	0 μM I		7.03	3.29	1.58	30.5	4.42 a	929.8	168.2
	5 μM I		5.43	3.32	1.49	30.6	2.70 b	909.4	165.0
AE	0 μM I		5.50	3.09	1.40	29.1	3.23 ab	951.1	180.4
	5 μM I		3.77	3.17	1.45	30.4	3.54 ab	931.1	171.5
FS	0 μM Se		6.32	3.27	1.53	30.0	2.79	899.04	165.1
	13 μM Se		6.15	3.33	1.54	31.1	4.33	940.18	168.2
AE	0 μM Se		4.55	3.06	1.39	27.9	2.74	932.14	180.1
	13 μM Se		4.72	3.20	1.46	31.6	4.03	950.01	171.8
0 μM I	0 μM Se		5.85	3.12	1.41	29.0	2.88 b	903.0	180.8
	13 μM Se		6.68	3.25	1.56	30.6	4.76 a	977.9	167.7
5 μM I	0 μM Se		5.02	3.21	1.50	28.9	2.65 b	928.2	164.4
	13 μM Se		4.18	3.27	1.43	32.1	3.59 b	912.3	172.2
Significance									
HS			*	ns	ns	ns	ns	ns	ns
I			*	ns	ns	ns	**	ns	ns
Se			ns	ns	ns	ns	***	ns	ns
HS × I			ns	ns	ns	ns	***	ns	ns
HS × Se			ns	ns	ns	ns	ns	ns	ns
I × Se			ns	ns	ns	ns	*	*	ns
HS × I × Se			ns	ns	ns	ns	***	ns	ns

Means ($n = 3$) flanked by the same letter are not statistically different for $p = 0.05$ after Duncan's test. Significance level: *** $p \leq 0.001$; ** $p \leq 0.01$; * $p \leq 0.05$; ns = not significant.

Table S9. Weight reduction, total phenol, flavonoid content, antioxidant capacity (FRAP), chlorophyll a to b ratio (chl a/chl b), total chlorophyll and carotenoid contents, measured after 7 days of storage, in leaves of lettuce grown in two different hydroponic systems with different concentrations of I and Se in the nutrient solution.

Hydroponic system	I added (μM)	Se added (μM)	Weight reduction (%)	Total phenols (mg GAE g ⁻¹ FW)	Flavonoids (mg catechin g ⁻¹ FW)	FRAP (μmol Fe(II) g ⁻¹ FW)	chl a/chl b	Chls tot (mg g ⁻¹ FW)	Car (mg g ⁻¹ FW)
FS	0	0	10.43	3.35	1.68	33.3	2.71	789.0	153.8
		13	8.07	3.15	1.64	32.3	2.78	947.5	138.4
	5	0	10.70	3.38	1.78	32.0	2.78	790.9	130.3
		13	10.13	3.42	1.58	34.1	2.47	735.5	124.1
A	0	0	9.97	3.33	1.86	30.6	2.60	781.4	146.0
		13	8.43	3.14	1.60	32.0	2.67	777.2	135.0
	5	0	10.50	3.31	1.65	30.1	2.81	797.0	136.3
		13	10.43	3.25	1.55	32.5	2.76	824.4	157.3
FS			9.83	3.33	1.67	32.9	2.69	815.7	136.6
AE			9.83	3.26	1.66	31.3	2.71	795.0	143.7
0 μM I			9.23	3.24	1.70	32.0	2.69	823.8	143.3
5 μM I			10.44	3.34	1.64	32.2	2.71	786.9	137.0
0 μM Se			10.40	3.34	1.74	31.5	2.73	789.6	141.6
13 μM Se			9.27	3.24	1.59	32.7	2.67	821.1	138.7
FS	0 μM I		9.25	3.25	1.66	32.8	2.75	868.2	146.1
	5 μM I		10.42	3.40	1.68	33.1	2.63	763.2	127.2
AE	0 μM I		9.20	3.24	1.73	31.3	2.63	779.3	140.5
	5 μM I		10.47	3.28	1.60	31.3	2.79	810.7	146.8
FS	0 μM Se		10.57	3.37	1.73	32.6	2.75	789.9	142.1
	13 μM Se		9.10	3.29	1.61	33.2	2.63	841.5	131.2
AE	0 μM Se		10.23	3.32	1.76	30.3	2.70	789.2	141.2
	13 μM Se		9.43	3.20	1.57	32.2	2.72	800.8	146.1
0 μM I	0 μM Se		10.20	3.34	1.77	31.9	2.65	785.2	149.9
	13 μM Se		8.25	3.15	1.62	32.1	2.73	862.3	136.7
5 μM I	0 μM Se		10.60	3.35	1.71	31.1	2.80	793.9	133.3
	13 μM Se		10.28	3.33	1.56	33.3	2.62	779.9	140.7
Significance									
HS			ns	ns	ns	ns	ns	ns	ns
I			ns	ns	ns	ns	ns	ns	ns
Se			ns	ns	ns	ns	ns	ns	ns
HS × I			ns	ns	ns	ns	*	ns	ns
HS × Se			ns	ns	ns	ns	ns	ns	ns
I × Se			ns	ns	ns	ns	*	ns	ns
HS × I × Se			ns	ns	ns	ns	ns	ns	ns

Means ($n = 3$) flanked by the same letter are not statistically different for $p = 0.05$ after Duncan's test. Significance level: *** $p \leq 0.001$; ** $p \leq 0.01$; * $p \leq 0.05$; ns = not significant.

Table S10. Total chlorophyll, carotenoid, total phenol, flavonoid content and antioxidant capacity (FRAP) measured at harvest (T0) and after 2 (T2), 4 (T4) and 7 (T7) days of storage, in leaves of lettuce grown in floating system with different concentrations of I and Se in the nutrient solution.

Time of storage	I added (μM)	Se added (μM)	Chls tot (mg g^{-1} DW)	Car (mg g^{-1} DW)	Total phenols (mg GAE g^{-1} DW)	Flavonoids ($\text{mg catechin g}^{-1}$ DW)	FRAP ($\mu\text{mol Fe(II) g}^{-1}$ DW)
T0	0	0	27.79	5.13	76.60	31.76	680.6
		13	26.56	4.07	75.30	35.90	764.8
	5	0	26.82	4.44	74.69	35.01	687.8
T2	0	13	27.23	4.66	74.78	32.02	754.1
		0	21.55	4.57	69.39	30.46	646.7
	5	13	23.88	4.04	78.06	36.25	745.4
T4	0	0	23.12	4.06	77.17	36.05	691.7
		13	23.37	4.52	81.09	36.27	828.8
	5	0	20.98	3.95	77.62	35.97	719.8
T7	0	13	22.69	3.95	76.85	37.96	712.0
		0	21.30	3.81	76.51	35.73	690.5
	5	13	23.36	4.30	86.55	37.22	813.8
	0	0	17.66	3.44	74.95	37.63	743.7
		13	22.25	3.25	73.93	38.68	758.1
	5	0	17.79	2.93	76.12	40.05	720.2
		13	17.67	2.98	82.13	37.92	820.5
	T0		27.10 a	4.57 a	75.34	33.67	721.82
	T2		22.98 b	4.30 ab	76.43	34.76	728.14
	T4		22.08 b	4.00 b	79.38	36.72	734.03
	T7		18.84 c	3.15 c	76.78	38.57	760.62
	0 μM I		22.92	4.05	75.34	35.58	721.4
	5 μM I		22.58	3.96	78.63	36.28	750.9
	0 μM Se		22.13	4.04	75.38	35.33	697.6 b
	13 μM Se		23.38	3.97	78.59	36.53	774.7 a
T0	0 μM I		27.17	4.60	75.95	33.83	722.7
	5 μM I		27.02	4.55	74.74	33.52	720.9
T2	0 μM I		22.71	4.31	73.72	33.36	696.0
	5 μM I		23.25	4.29	79.13	36.16	760.2
T4	0 μM I		21.84	3.95	77.23	36.97	715.9
	5 μM I		22.33	4.05	81.53	36.48	752.1
T7	0 μM I		19.96	3.35	74.44	38.15	750.9
	5 μM I		17.73	2.96	79.12	38.98	770.3
T0	0 μM Se		27.31	4.79	75.65	33.39	684.2
	13 μM Se		26.89	4.36	75.04	33.96	759.5
T2	0 μM Se		22.34	4.31	73.28	33.26	669.2

	13 μ M Se	23.62	4.28	79.57	36.26	787.1
T4	0 μ M Se	21.14	3.88	77.06	35.85	705.2
	13 μ M Se	23.03	4.12	81.70	37.59	762.9
T7	0 μ M Se	17.73	3.19	75.54	38.84	731.9
	13 μ M Se	19.96	3.12	78.03	38.30	789.3
0 μ M I	0 μ M Se	21.99	4.27	74.64	33.96	697.7
	13 μ M Se	22.26	3.81	76.12	36.71	697.6
5 μ M I	0 μ M Se	23.85	3.83	76.03	37.20	745.1
	13 μ M Se	22.91	4.11	81.14	35.86	804.3
Significance						
T		***	***	ns	ns	ns
I		ns	ns	ns	ns	ns
Se		ns	ns	ns	ns	**
T \times I		ns	ns	ns	ns	ns
T \times Se		ns	ns	ns	ns	ns
I \times Se		ns	ns	ns	ns	ns
T \times I \times Se		ns	ns	ns	ns	ns

Means ($n = 3$) flanked by the same letter are not statistically different for $p = 0.05$ after Duncan's test. Significance level: *** $p \leq 0.001$; ** $p \leq 0.01$; * $p \leq 0.05$; ns = not significant.

Table S11. Total chlorophyll, carotenoid, total phenol, flavonoid content and antioxidant capacity (FRAP) measured at harvest (T0) and after 2 (T2), 4 (T4) and 7 (T7) days of storage, in leaves of lettuce grown in aeroponics with different concentrations of I and Se in the nutrient solution.

Time of storage	I added (μM)	Se added (μM)	Chls tot (mg g ⁻¹ DW)	Car (mg g ⁻¹ DW)	Total phenols (mg GAE g ⁻¹ DW)	Flavonoids (mg catechin g ⁻¹ DW)	FRAP (μmol Fe(II) g ⁻¹ DW)
T0	0	0	21.44	4.14	73.55	29.79	695.3
		13	25.98	4.48	64.77	23.90	627.5
	5	0	22.41	4.18	64.97	26.10	576.6
T2	0	13	24.34	4.26	73.45	31.50	705.4
		0	19.70	3.66	72.84	31.69	670.2
	5	13	24.04	3.89	77.84	32.43	700.5
T4	0	0	19.95	3.55	67.21	29.88	632.1
		13	22.17	3.84	76.81	32.85	731.4
	5	0	18.36	3.29	75.87	38.30	678.7
T7	0	13	22.84	2.65	73.47	34.88	697.8
		0	17.71	2.95	71.04	31.62	631.5
	5	13	17.43	2.93	76.58	35.74	764.2
	0	0	16.92	3.16	72.09	40.22	661.9
		13	18.78	3.26	75.91	38.70	772.4
	5	0	15.85	2.71	65.78	32.84	599.0
		13	18.51	3.53	72.92	34.69	730.1
	T0		23.55 a	4.26 a	69.18	27.82 c	651.2
	T2		21.46 b	3.74 ab	73.68	31.71 bc	683.6
	T4		19.08 c	2.96 c	74.24	35.13 ab	693.1
	T7		17.51 c	3.17 bc	71.68	36.61 a	690.9
	0 μM I		21.01 a	3.57	73.29	33.74	688.0
	5 μM I		19.80 b	3.49	71.10	31.90	671.3
	0 μM Se		19.04 b	3.46	70.42	32.55	643.2 b
	13 μM Se		21.76 a	3.61	73.97	33.09	716.2 a
T0	0 μM I		23.71	4.31	69.16	26.84	661.4
	5 μM I		23.38	4.22	69.21	28.80	641.0
T2	0 μM I		21.87	3.78	75.34	32.06	685.4
	5 μM I		21.06	3.70	72.01	31.36	681.8
T4	0 μM I		20.60	2.97	74.67	36.59	688.3
	5 μM I		17.57	2.94	73.81	33.68	697.9
T7	0 μM I		17.85	3.21	74.00	39.46	717.2
	5 μM I		17.18	3.12	69.35	33.77	664.6
T0	0 μM Se		21.93	4.16	69.26	27.94	635.9
	13 μM Se		25.16	4.37	69.11	27.70	666.4
T2	0 μM Se		19.83	3.61	70.03	30.78	651.2
	13 μM Se		23.10	3.87	77.33	32.64	716.0
T4	0 μM Se		18.03	3.12	73.46	34.96	655.1
	13 μM Se		20.14	2.79	75.03	35.31	731.0
T7	0 μM Se		16.39	2.94	68.94	36.53	630.5
	13 μM Se		18.64	3.40	74.42	36.70	751.3
0 μM I	0 μM Se		19.11 b	3.56	73.59	35.00	676.5 b
	13 μM Se		22.91 a	3.57	73.00	32.48	699.6 ab

5 μ M I	0 μ M Se	18.98 b	3.35	67.25	30.11	609.8 c
	13 μ M Se	20.61 b	3.64	74.94	33.69	732.8 a
Significance						
T		***	**	ns	***	ns
I		*	ns	ns	ns	ns
Se		***	ns	ns	ns	***
T \times I		ns	ns	ns	ns	ns
T \times Se		ns	ns	ns	ns	ns
I \times Se		*	ns	ns	*	*
T \times I \times Se		ns	ns	ns	ns	ns

Means ($n = 3$) flanked by the same letter are not statistically different for $p = 0.05$ after Duncan's test. Significance level: *** $p \leq 0.001$; ** $p \leq 0.01$; * $p \leq 0.05$; ns = not significant.

Table S12. Chlorophyll a to b ratio (chl a/chl b), total chlorophyll, carotenoid contents and weight reduction, measured at harvest (T0), after 2 (T2), 4 (T4) and 7 (T7) days of storage, in leaves of lettuce plants grown in floating system at different concentrations of I and Se in the nutrient solution.

Time of storage	I added (μM)	Se added (μM)	chl a/chl b	Chls tot (mg g^{-1} FW)	Car (mg g^{-1} FW)	Weight reduction (%)
T0	0	0	2.83 d	1.112	0.205	
		13	2.66 d	1.041	0.160	
	5	0	2.58 d	1.065	0.176	
		13	2.85 d	1.018	0.174	
T2	0	0	2.83 d	0.910	0.193	5.27
		13	3.62 c	0.992	0.168	5.73
	5	0	2.65 d	0.955	0.168	3.83
		13	4.43 b	0.908	0.176	3.70
T4	0	0	2.93 d	0.896	0.169	6.43
		13	5.90 a	0.963	0.168	7.63
	5	0	2.65 d	0.902	0.161	6.20
		13	2.75 d	0.917	0.169	4.67
T7	0	0	2.71 d	0.789	0.154	10.43
		13	2.78 d	0.947	0.138	8.07
	5	0	2.78 d	0.791	0.130	10.70
		13	2.47 d	0.735	0.124	10.13
	T0		2.73 b	1.059 a	0.179 a	
	T2		3.39 ab	0.941 b	0.176 a	4.63 c
	T4		3.56 a	0.920 b	0.167 a	6.23 b
	T7		2.69 b	0.816 c	0.137 b	9.83 a
	0 μM I		3.28 a	0.956	0.169	7.26
	5 μM I		2.90 b	0.911	0.160	6.54
	0 μM Se		2.75 b	0.927	0.170	7.14
	13 μM Se		3.43 a	0.940	0.159	6.66
T0	0 μM I		2.75 b	1.076	0.182	
	5 μM I		2.72 b	1.042	0.175	
T2	0 μM I		3.23 b	0.951	0.180	5.50
	5 μM I		3.54 ab	0.931	0.172	3.77
T4	0 μM I		4.42 a	0.930	0.168	7.03
	5 μM I		2.70 b	0.909	0.165	5.43
T7	0 μM I		2.75 b	0.868	0.146	9.25
	5 μM I		2.63 b	0.763	0.127	10.42
T0	0 μM Se		2.71 b	1.088	0.191	
	13 μM Se		2.76 b	1.030	0.167	
T2	0 μM Se		2.74 b	0.932	0.180	4.55
	13 μM Se		4.03 a	0.950	0.172	4.72
T4	0 μM Se		2.79 b	0.899	0.165	6.32
	13 μM Se		4.33 a	0.940	0.168	6.15
T7	0 μM Se		2.75 b	0.790	0.142	10.57
	13 μM Se		2.63 b	0.841	0.131	9.10
0 μM I	0 μM Se		2.83 b	0.927	0.180	7.38
	13 μM Se		3.74 a	0.986	0.158	7.14
5 μM I	0 μM Se		2.67 b	0.928	0.159	6.91

	13 μ M Se	3.13 ab	0.895	0.161	6.17
	Significance				
T	***	***	**	***	
I	**	ns	ns	ns	
Se	***	ns	ns	ns	
T \times I	***	ns	ns	ns	
T \times Se	***	ns	ns	ns	
I \times Se	*	ns	ns	ns	
T \times I \times Se	***	ns	ns	ns	

Means ($n = 3$) flanked by the same letter are not statistically different for $p = 0.05$ after Duncan's test. Significance level: *** $p \leq 0.001$; ** $p \leq 0.01$; * $p \leq 0.05$; ns = not significant.

Table S13. Total phenol, flavonoid content and antioxidant capacity (FRAP), measured at harvest and after 2, 4 and 7 days of storage, in leaves of lettuce plants grown in floating system at different concentrations of I and Se in the nutrient solution.

Time of storage	I added (μM)	Se added (μM)	Total phenols (mg GAE g ⁻¹ FW)	Flavonoids (mg catechin g ⁻¹ FW)	FRAP (μmol Fe(II) g ⁻¹ FW)
T0	0	0	3.06	3.81	81.67
		13	2.95	4.22	89.94
	5	0	2.97	4.17	81.91
		13	2.80	3.59	84.61
T2	0	0	2.93	3.86	81.93
		13	3.24	4.52	92.83
	5	0	3.19	4.46	85.64
		13	3.15	4.22	96.59
T4	0	0	3.31	4.62	92.18
		13	3.26	4.83	90.67
	5	0	3.24	4.54	87.73
		13	3.39	4.38	95.75
T7	0	0	3.35	5.05	99.77
		13	3.15	4.93	96.93
	5	0	3.38	5.33	96.06
		13	3.42	4.74	102.43
	T0		2.94 b	1.32 b	28.18 b
	T2		3.13 ab	1.42 b	29.75 b
	T4		3.30 a	1.53 ab	30.53 ab
	T7		3.33 a	1.67 a	32.93 a
	0 μM I		3.16	1.49	30.25
	5 μM I		3.19	1.48	30.45
	0 μM Se		3.18	1.49	29.45
	13 μM Se		3.17	1.48	31.24
T0	0 μM I		3.01	1.34	28.60
	5 μM I		2.88	1.29	27.75
T2	0 μM I		3.09	1.40	29.13
	5 μM I		3.17	1.45	30.37
T4	0 μM I		3.29	1.58	30.47
	5 μM I		3.32	1.49	30.58
T7	0 μM I		3.25	1.66	32.78
	5 μM I		3.40	1.68	33.08
T0	0 μM Se		3.01	1.33	27.26
	13 μM Se		2.87	1.30	29.09
T2	0 μM Se		3.06	1.39	27.93
	13 μM Se		3.20	1.46	31.57
T4	0 μM Se		3.27	1.53	29.98
	13 μM Se		3.33	1.54	31.07
T7	0 μM Se		3.37	1.73	32.64
	13 μM Se		3.29	1.61	33.23
0 μM I	0 μM Se		3.16	1.44	29.63
	13 μM Se		3.15	1.54	30.86
5 μM I	0 μM Se		3.19	1.54	29.28
	13 μM Se		3.19	1.41	31.61

Significance			
T	**	*	*
I	ns	ns	ns
Se	ns	ns	ns
T × I	ns	ns	ns
T × Se	ns	ns	ns
I × Se	ns	ns	ns
T × I × Se	ns	ns	ns

Means ($n = 3$) flanked by the same letter are not statistically different for $p = 0.05$ after Duncan's test. Significance level: *** $p \leq 0.001$; ** $p \leq 0.01$; * $p \leq 0.05$; ns = not significant.

Table S14. Chlorophyll a to b ratio (chl a/chl b), total chlorophyll, carotenoid contents and weight reduction, measured at harvest and after 2, 4 and 7 days of storage, in leaves of lettuce grown in aeroponics at different concentrations of I and Se in the nutrient solution.

Hydroponic system	I added (μM)	Se added (μM)	chl a/chl b	Chls tot (mg g^{-1} FW)	Car (mg g^{-1} FW)	Weight reduction (%)
T0	0	0	2.87 bc	0.892	0.172	
		13	2.89 b	0.985	0.170	
	5	0	2.87 bc	1.009	0.188	
		13	3.22 a	0.971	0.170	
T2	0	0	2.42 d	0.852	0.158	3.77
		13	2.77 bc	0.938	0.152	2.83
	5	0	2.58 cd	0.932	0.166	3.73
		13	2.84 bc	0.921	0.160	3.97
T4	0	0	2.80 bc	0.804	0.144	5.03
		13	1.60 e	0.909	0.105	4.83
	5	0	2.69 bcd	0.830	0.138	4.07
		13	2.47 d	0.734	0.124	5.23
T7	0	0	2.60 cd	0.781	0.146	9.97
		13	2.67 bcd	0.777	0.135	8.43
	5	0	2.81 bc	0.797	0.136	10.50
		13	2.76 bc	0.824	0.157	10.43
	T0		2.96 a	0.964 a	0.175 a	
	T2		2.65 b	0.911 a	0.159 ab	3.58 c
	T4		2.39 c	0.819 b	0.128 c	4.79 b
	T7		2.71 ab	0.795 b	0.144 bc	9.83 a
	0 μM I		2.58 b	0.867	0.148	5.81
	5 μM I		2.78 a	0.877	0.155	6.32
	0 μM Se		2.70	0.862	0.156	6.18
	13 μM Se		2.65	0.882	0.147	5.96
T0	0 μM I		2.88	0.938	0.171	
	5 μM I		3.04	0.990	0.179	
T2	0 μM I		2.60	0.895	0.155	3.30
	5 μM I		2.71	0.926	0.163	3.85
T4	0 μM I		2.20	0.857	0.125	4.93
	5 μM I		2.58	0.782	0.131	4.65
T7	0 μM I		2.63	0.779	0.141	9.20
	5 μM I		2.79	0.811	0.147	10.47
T0	0 μM Se		2.87 ab	0.950	0.180	
	13 μM Se		3.05 a	0.978	0.170	
T2	0 μM Se		2.50 c	0.892	0.162	3.75
	13 μM Se		2.80 ab	0.929	0.156	3.40
T4	0 μM Se		2.75bc	0.817	0.141	4.55
	13 μM Se		2.04 d	0.822	0.114	5.03
T7	0 μM Se		2.70 bc	0.789	0.141	10.23
	13 μM Se		2.72 bc	0.801	0.146	9.43
0 μM I	0 μM Se		2.67 ab	0.832 b	0.155	6.26
	13 μM Se		2.48 b	0.902 a	0.140	5.37
5 μM I	0 μM Se		2.74 ab	0.892 ab	0.157	6.10

	13 μ M Se	2.82 a	0.863 ab	0.153	6.54
	Significance				
T		***	***	*	***
I		***	ns	ns	ns
Se		ns	ns	ns	ns
T \times I		ns	ns	ns	ns
T \times Se		***	ns	ns	ns
I \times Se		**	*	ns	ns
T \times I \times Se		***	ns	ns	ns

Means ($n = 3$) flanked by the same letter are not statistically different for $p = 0.05$ after Duncan's test. Significance level: *** $p \leq 0.001$; ** $p \leq 0.01$; * $p \leq 0.05$; ns = not significant.

Table S15. Total phenol, flavonoid content and antioxidant capacity (FRAP) measured at harvest and after 2, 4 and 7 days of storage, in leaves of lettuce plants grown in aeroponics at different concentrations of I and Se in the nutrient solution.

Hydroponic system	I added (μM)	Se added (μM)	Total phenols (mg GAE g ⁻¹ FW)	Flavonoids (mg catechin g ⁻¹ FW)	FRAP (μmol Fe(II) g ⁻¹ FW)
T0	0	0	3.06	1.24	28.92
		13	2.45	0.91	23.78
	5	0	2.92	1.17	25.95
		13	2.93	1.26	28.15
T2	0	0	3.15	1.37	28.97
		13	3.04	1.27	27.32
	5	0	3.14	1.39	29.54
		13	3.19	1.37	30.40
T4	0	0	3.32	1.68	29.71
		13	2.92	1.39	27.76
	5	0	3.33	1.48	29.61
		13	3.22	1.50	32.20
T7	0	0	3.33	1.86	30.58
		13	3.14	1.60	31.97
	5	0	3.31	1.65	30.11
		13	3.25	1.55	32.53
	T0		2.84 b	1.14	26.70 b
	T2		3.13 a	1.35	29.06 a
	T4		3.20 a	1.51	29.82 a
	T7		3.26 a	1.66	31.30 a
	0 μM I		3.05	1.41	28.63
	5 μM I		3.16	1.42	29.81
	0 μM Se		3.20 a	1.48 a	29.17
	13 μM Se		3.02 b	1.35 b	29.26
T0	0 μM I		2.76	1.07	26.35
	5 μM I		2.93	1.22	27.05
T2	0 μM I		3.09	1.32	28.15
	5 μM I		3.16	1.38	29.97
T4	0 μM I		3.12	1.53	28.74
	5 μM I		3.28	1.49	30.90
T7	0 μM I		3.24	1.73	31.27
	5 μM I		3.28	1.60	31.32
T0	0 μM Se		2.99	1.21	27.43
	13 μM Se		2.69	1.08	25.96
T2	0 μM Se		3.14	1.38	29.26
	13 μM Se		3.12	1.32	28.86
T4	0 μM Se		3.33	1.58	29.66
	13 μM Se		3.07	1.44	29.98
T7	0 μM Se		3.32	1.76	30.35
	13 μM Se		3.20	1.57	32.25
0 μM I	0 μM Se		3.22	1.54 a	29.55 ab
	13 μM Se		2.89	1.29 b	27.71 b
5 μM I	0 μM Se		3.17	1.43 ab	28.80 ab
	13 μM Se		3.15	1.42 ab	30.82 a

Significance			
T	**	***	**
I	ns	ns	ns
Se	*	*	ns
T × I	ns	ns	ns
T × Se	ns	ns	ns
I × Se	ns	*	*
T × I × Se	ns	ns	ns

Means ($n = 3$) flanked by the same letter are not statistically different for $p = 0.05$ after Duncan's test. Significance level: *** $p \leq 0.001$; ** $p \leq 0.01$; * $p \leq 0.05$; ns = not significant.

Table S16. Weight loss during post-harvest: results of four-way ANOVA with hydroponic system (HS), selenium (Se), idione (I) and time during post-harvest (T).

	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
HS	1	0.00125	0.00125	4.973	0.0305	*
Se	1	0.00023	0.000228	0.905	0.3461	
I	1	0.00002	0.00002	0.08	0.7788	
T	2	0.04278	0.021391	85.099	$<2 \times 10^{-16}$	***
HS:Se	1	0.00003	0.000032	0.127	0.7228	
HS:I	1	0.00068	0.000684	2.723	0.1054	
HS:T	2	0.00067	0.000335	1.331	0.2738	
Se:I	1	0.00008	0.000076	0.303	0.5848	
Se:T	2	0.00056	0.000282	1.12	0.3346	
I:T	2	0.00161	0.000805	3.203	0.0495	*
HS:Se:I	1	0.00038	0.000383	1.523	0.2232	
Se:I:T	2	0.00041	0.000203	0.808	0.4517	
HS:I:T	2	0.00036	0.00018	0.714	0.4947	
HS:Se:T	2	0.00014	0.000069	0.275	0.761	
HS:Se:I:T	2	0.00037	0.000184	0.734	0.4854	
Residuals	48	0.01207	0.000251			

Significance level: *** $p \leq 0.001$; ** $p \leq 0.01$; * $p \leq 0.05$; ns = not significant.

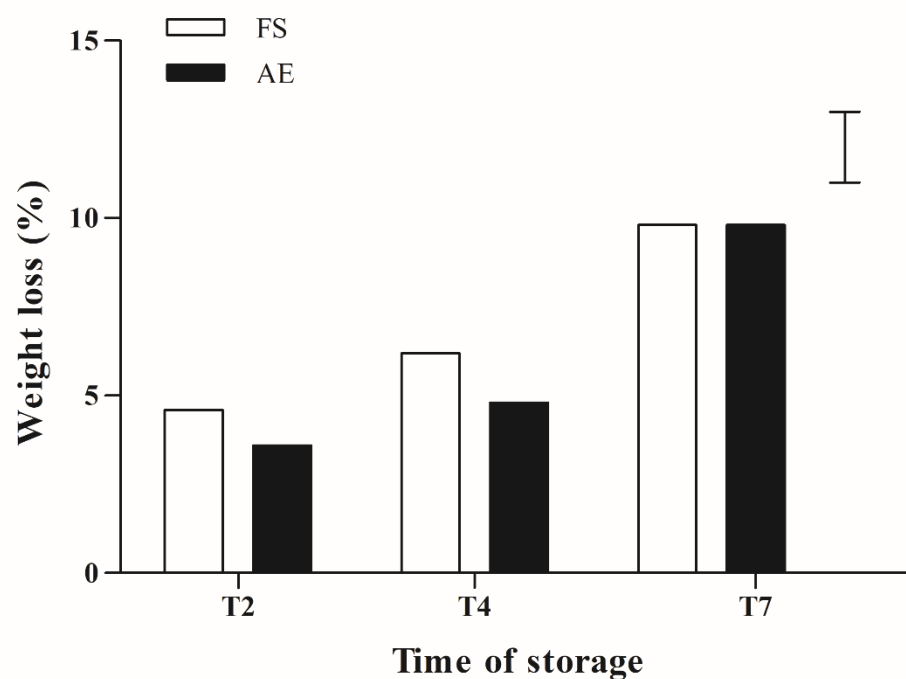


Figure S1. Average value of weight loss after 2 (T2), 4 (T4) and 7 (T7) days of storage in leaves of lettuce plants grown in floating system (FS) and aeroponics (AE) at different concentrations of I (0 and 5 μ M) and Se (0 and 13 μ M) in the nutrient solution, in the second experiment. Bar indicates LSD value.