Figure S1. 'Black Summer' control plant that was grown with a complete Hoagland's solution for six weeks after transplant.

Figure S2. 'Red Pac' control plant that was grown with a complete Hoagland's solution for six weeks after transplant.

Table S1. Leaf tissue nutrient concentration and total plant dry weight of bok choy 'Black Summer'.

	Nutrient												
Treatment	**−N**	**−P**	**−K**	**−Ca**	**−Mg**	**−S**	**−B[z]**	**++B[y]**	**−Cu**	**−Fe**	**−Mn**	**−Mo**	**−Zn**
	Dry mass (g)												
Control	2.1	8.4	2.1	8.4	12.2	17.2	8.4	12.2	17.2	2.1	3.8	NR	3.8
Treatment	0.8	5.5	2.2	4.8	12.1	14.3	3.6	13.9	19.8	1.4	2.3		2.0
p-value[x]	***	*	NS	*	NS	NS	*	NS	NS	NS	NS		*
	Nutrient concentration (%)						**Tissue Nutrient Concentration (mg·kg^{-1})**						
Element	N	P	K	Ca	Mg	S	−B	++B	Cu	Fe	Mn	Mo	Zn
Control	5.6	0.4	8.8	2.2	0.7	1.3	37.8	48.7	5.7	77.9	79.8	NR	16.1
Treatment	1.8	0.1	0.5	1.0	0.1	0.1	7.7	594.5	2.32	47.4	23.8		8.9
p-value	***	***	***	**	***	***	***	***	**	*	***		**
	Tissue Value Recommended Ranges[w]												
Optimal Range	2.39–5.51	0.36–0.8	2.86–5.74	1.29–3.21	0.19–0.35	0.41–0.77	19–39	NR[U]	3–7	85–363	35–52	1.5–6.4	14–38

[z] Boron-deficiency treatments indicated by −B; [y] Boron toxicity treatments indicated by ++B; [x] *, **, or *** indicates statistically significant differences between sample means based on *F* test at $P \leq 0.05$, $P \leq 0.01$, or $P \leq 0.001$, respectively. NS (not significant) indicates the *F* test difference between sample means was $P > 0.05$. [v] Statistically significant based on *F* test at $P \leq 0.05$; [w] NR indicates values not reported.; [u] Reference for recommended ranges for bok choy [18].

Table S2. Leaf tissue nutrient concentration and total plant dry weight of bok choy 'Red Pac'.

	Nutrient												
Treatment	**−N**	**−P**	**−K**	**−Ca**	**−Mg**	**−S**	**−B[z]**	**++B[y]**	**−Cu**	**−Fe**	**−Mn**	**−Mo**	**−Zn**
	Dry mass (g)												
Element	N	P	K	Ca	Mg	S	B	B	Cu	Fe	Mn	Mo	Zn
Control	0.93	1.53	0.93	8.47	8.47	2.13	8.47	8.47	11.10	0.93	0.93	11.1	1.53
Treatment	0.53	0.97	0.74	3.10	7.57	2.60	2.37	4.60	11.0	0.70	1.03	9.13	0.93
p-value[x]	***[v]	NS	NS	**	*	NS	*	*	NS	NS	NS	*	*
	Tissue nutrient concentration (%)							**Tissue nutrient concentration (mg·kg^{-1})**					
Element	N	P	K	Ca	Mg	S	B	B	Cu	Fe	Mn	Mo	Zn
Control	5.85	0.55	6.95	2.93	0.65	1.01	57.8	57.84	3.57	153.4	131.3	0.01[3]	15.6
Treatment	2.19	0.09	0.62	0.39	0.10	0.28	5.94	231.0	0.43	73.6	25.4	0.01	10.6
p-value	***	***	***	***	***	***	***	***	***	*	***	NS	*
	Tissue Value Recommended Ranges[w]												
Optimal Range	2.39-5.51	0.36-0.8	2.86-5.74	1.29-3.21	0.19-0.35	0.41-0.77	19-39	NR[U]	3-7	85-363	35-52	1.5-6.4	14-38

[z] Boron-deficiency treatments indicated by –B; [y] Boron toxicity treatments indicated by ++B; [x] *, **, or *** indicates statistically significant differences between sample means based on *F* test at $P \leq 0.05$, $P \leq 0.01$, or $P \leq 0.001$, respectively. NS (not significant) indicates the *F* test difference between sample means was $P > 0.05$. [v] Statistically significant based on *F* test at $P \leq 0.05$; [w] Reference for recommended ranges for bok choy [18]; [u] NR indicates values not reported.

Table S3. Chlorophyll, total carotenoid, and anthocyanin concentration of bok choy 'Black Summer'.

Treatment	Control	–N	–P	–K	–Ca	–Mg	–S	–B[z]	++B	–Cu	–Fe	–Mn	–Zn
Fresh leaf weight (g)													
Treatment	11.17	3.24	5.20	8.54	5.47	7.31	11.07	6.69	7.88	10.69	6.74	9.50	6.07
p-value		**	**	NS	**	*	NS	*	NS	NS	*	NS	*
Chlorophyll a (mg/g^{-1})													
Treatment	2.31	0.56	1.96	2.03	1.43	1.23	1.43	0.84	1.75	2.28	1.20	2.31	1.88
p-value[x]		***	NS	NS	**	**	*	**	*	NS	**	NS	NS
Chlorophyll b (mg/g^{-1})													
Treatment	1.13	0.39	0.99	0.99	0.84	0.63	0.71	0.49	0.98	1.11	0.60	1.13	0.86
p-value		***	NS	NS	NS	*	*	**	NS	NS	**	NS	NS
Chlorophyll a/b													
Treatment	2.08	1.6	1.97	2.1	1.7	2.0	2.0	1.8	1.8	2.1	2.1	2.1	2.23
p-value[x]		**	NS	NS	**	NS	NS	**	*	NS	NS	NS	*
Total Chlorophyll (mg/g^{-1})													
Treatment	3.45	0.95	2.94	3.02	2.28	1.86	2.14	1.32	2.73	3.40	1.80	3.44	2.74
p-value		***	NS	NS	*	**	*	***	NS	NS	**	NS	NS
Total Carotenoids (mg/g^{-1})													
Treatment	1.22	0.55	1.17	0.96	0.90	0.79	1.31	0.67	1.07	1.21	0.86	1.31	1.16
p-value[x]		***[v]	NS	NS	NS	*	NS	**	NS	NS	*	NS	NS
SPAD (RCC)													
Treatment	62.92	34.18	64.65	66.98	69.38	52.77	56.50	57.52	65.63	63.37	49.83	31.60	63.08
p-value		***	NS	NS	NS	NS	NS	NS	NS	NS	*	***	NS

[z] Boron-deficiency treatments indicated by –B; [y] Boron toxicity treatments indicated by ++B; [x] *, **, or *** indicates statistically significant differences between sample means based on *F* test at $P \leq 0.05$, $P \leq 0.01$, or $P \leq 0.001$, respectively. NS (not significant) indicates the *F* test difference between sample means was $P > 0.05$. [v] Statistically significant based on *F* test at $P \leq 0.05$

Table S4. Chlorophyll, total carotenoid, and anthocyanin concentration of bok choy 'Red Pac'.

Treatment	Control	−N	−P	−K	−Ca	−Mg	−S	−B[z]	++B[y]	−Cu	−Fe	−Mn	−Mo	−Zn
Fresh leaf weight (g)														
Treatment	7.33	1.70	2.39	4.51	3.94	8.46	8.21	2.59	5.14	10.16	3.26	4.60	7.65	4.01
p-value		**	**	NS	*	NS	NS	*	NS	NS	*	NS	NS	*
Chlorophyll a (mg/g^{-1})														
Treatment	2.33	0.66	2.20	1.95	2.18	2.05	1.39	2.25	1.81	2.33	0.36	1.27	2.15	1.95
p-value[x]		***[v]	NS	NS	NS	NS	***	NS	*	NS	***	***	NS	NS
Chlorophyll b (mg/g^{-1})														
Treatment	1.06	0.40	1.11	0.88	1.15	0.86	0.71	1.10	0.85	0.97	0.19	0.64	0.96	0.89
p-value[x]		***	NS	NS	NS	*	**	NS	NS	NS	***	**	NS	NS
Chlorophyll a/b														
Treatment	2.2	1.6	2.0	2.2	2.0	2.4	2.0	2.1	2.1	2.4	1.9	2.0	2.2	2.2
p-value[x]		***[*]	*	NS	*	*	*	NS	NS	NS	*	**	NS	NS
Total Chlorophyll (mg/g^{-1})														
Treatment	3.40	1.06	3.32	2.83	3.34	2.90	2.10	3.35	2.65	3.30	0.55	1.91	3.10	2.85
p-value[x]		***	NS	NS	NS	NS	***	NS	*	NS	***	***	NS	NS
Total Carotenoids (mg/g^{-1})														
Treatment	1.52	0.55	1.54	1.26	1.52	1.30	0.96	1.49	1.20	1.50	0.27	0.94	1.37	1.26
p-value[x]		***[v]	NS	NS	NS	NS	**	NS	*	NS	***	***	NS	NS
SPAD (RCC)														
Treatment	58.78	30.72	52.92	55.58	56.73	50.07	45.68	60.47	48.53	56.37	17.27	36.82	55.35	53.47
p-value		*	NS	NS	NS	*	**	NS	*	NS	***	***	NS	NS
Anthocyanin (mg·kg^{-1})														
Treatment	619.1	551.7	890.0	187.3	286.9	616.4	237.7	83.1	303.6	596.8	323.7	422.1	345.6	321.5
p-value[x]		NS	NS	*	*	NS	*	*	*	NS	NS	NS	NS	NS

[z] Boron-deficiency treatments indicated by –B; [y] Boron toxicity treatments indicated by ++B; [x] *, **, or *** indicates statistically significant differences between sample means based on F test at $P \leq 0.05$, $P \leq 0.01$, or $P \leq 0.001$, respectively. NS (not significant) indicates the F test difference between sample means was $P > 0.05$.

Table S5. Summary table outlining nutrient deficiency symptoms for bok choy.

		Macronutrients	
Treatment	**Days until symptoms observed**	**'Black Summer'**	**'Red Pac'**
Nitrogen-Deficiency	11	Stunted growth, lower leaf yellowing developing into necrosis in advanced stages.	Stunted growth, lower foliage paleness developing into necrosis.
Phosphorus-Deficiency	16	Stunted growth, and yellowing of the leaf margin.	Stunted growth, with yellowing of the leaf margin with irregular spotting occurring on the lower foliage.
Potassium-Deficiency	11	Yellowing of the leaf margin of the lower foliage early in production, developing into interveinal chlorosis.	Stunted growth and overall paleness of the lower foliage, developing into necrosis later in production.
Calcium-Deficiency	24	Stunted growth, leaf cupping, and curling with irregular growth habits. Eventual death of the growing tip.	Severely stunted growth when compared to control plants, cupping, and curling of new and developing leaves.
Magnesium-Deficiency	38	Chlorosis of the leaf margin of the lower foliage spreading inward, interveinal chlorosis developing later in the production cycle.	Irregular chlorotic spotting forming on the lower leaves later in the production cycle, developing into entire leaf necrosis.
Sulfur-Deficiency	22	No symptoms observed.	Overall loss of color in the middle foliage. Loss of red coloration as symptoms progressed.
		Micronutrients	
Iron-Deficiency	11	Marginal chlorosis developing in the new expanding leaves developing into interveinal chlorosis.	Initial loss of color in the new expanding leaves later developing into interveinal chlorosis.
Zinc-Deficiency	15	An initial slight loss of coloring developing into severe interveinal chlorosis of the new foliage developing into in necrosis.	Overall loss of color in the new expanding leaves developing into necrotic spotting of developing leaves.
Manganese-Deficiency	12	Bright yellow interveinal chlorosis that developed into necrosis.	Overall loss of color developing into netted chlorosis on upper foliage developing into necrosis.
Copper-Deficiency	NA	No symptoms observed.	No symptoms observed.
Molybdenum-Deficiency	NA	No symptoms observed.	No symptoms observed.
Boron-Deficiency	21	Stunted of growth accompanied by leaf cupping a curling. Eventual loss of the growing tip in severe cases.	Stunted growth accompanied by leaf cupping and curling with irregular spotting on the new expanding leaves.
Boron Toxicity	35	Interveinal chlorosis forming on lower foliage, developing into necrotic spotting.	Overall loss of color in the lower older foliage and severe necrotic spotting.