

## Supplement — Greger and Landberg

**Table S1.** Available macronutrient concentration in investigated soils after 90 days treatment with various supplementations of Si. *P*-value indicates if concentration of element increase/decrease with increased Si-treatment. *n*=5,  $\pm$ SE. \*indicates significant difference  $P<0.05$  from the untreated soil.

Soil type	Treatment Si kg ha <sup>-1</sup>	K mg kg <sup>-1</sup>	Mg mg kg <sup>-1</sup>	Ca mg kg <sup>-1</sup>	P mg kg <sup>-1</sup>	S mg kg <sup>-1</sup>
Clayey	0	177 $\pm$ 8	144 $\pm$ 9	1459 $\pm$ 59	18.1 $\pm$ 0.1	12.7 $\pm$ 0.8
	80	184 $\pm$ 7	139 $\pm$ 9	1475 $\pm$ 13	19.5 $\pm$ 0.9	13.1 $\pm$ 0.7
	1000	171 $\pm$ 4	131 $\pm$ 4	1883 $\pm$ 54*	23.2 $\pm$ 0.8*	19.2 $\pm$ 1.1*
	<i>P</i> -value	0.843	0.008*	0.017*	0.014*	0.008*
Sandy	0	93 $\pm$ 3	99 $\pm$ 6	710 $\pm$ 11	6.1 $\pm$ 0.2	7.9 $\pm$ 0.1
	80	85 $\pm$ 5	89 $\pm$ 6	748 $\pm$ 66	6.3 $\pm$ 0.6	8.5 $\pm$ 0.1
	1000	96 $\pm$ 9	83 $\pm$ 3*	943 $\pm$ 57*	6.7 $\pm$ 0.1*	8.5 $\pm$ 0.1
	<i>P</i> -value	0.743	0.018*	0.002*	0.020*	0.056
Alum shale	0	402 $\pm$ 36	170 $\pm$ 2	2313 $\pm$ 96	17.1 $\pm$ 0.8	69.6 $\pm$ 0.2
	80	437 $\pm$ 30	173 $\pm$ 9	2302 $\pm$ 41	17.9 $\pm$ 0.0	75.6 $\pm$ 3.2
	1000	400 $\pm$ 25	178 $\pm$ 8	2231 $\pm$ 27	24.0 $\pm$ 1.1*	79.5 $\pm$ 0.2*
	<i>P</i> -value	0.920	0.039*	0.064	0.007*	0.048*
Submerged	0	299 $\pm$ 1	267 $\pm$ 7	2169 $\pm$ 144	26.0 $\pm$ 0.9	101 $\pm$ 8.4
	80	337 $\pm$ 9	261 $\pm$ 16	1966 $\pm$ 110	27.9 $\pm$ 0.8	96 $\pm$ 8.4
	1000	308 $\pm$ 17	278 $\pm$ 23	2584 $\pm$ 107*	34.1 $\pm$ 0.4*	100 $\pm$ 7.1
	<i>P</i> -value	0.615	0.242	0.276	0.012	0.831

**Table S2.** Available micronutrient concentration in investigated soils after 90 days treatment with various supplementations of Si. *P*-value indicates if concentration of element increase/decrease with increased Si-treatment. n=5,  $\pm$ SE. \*indicates significant difference  $P < 0.05$  from the untreated soil.

Soil type	Treatment Si kg/ha	Cl mg/kg	Mn mg/kg	Fe mg/kg	Zn mg/kg	Cu mg/kg	Mo $\mu$ g/kg
Clayey	0	79 $\pm$ 3	18 $\pm$ 1.1	2926 $\pm$ 73	3.2 $\pm$ 0.2	2.0 $\pm$ 0.1	128 $\pm$ 7
	80	76 $\pm$ 5	19.1 $\pm$ 1.4	2735 $\pm$ 182	3.3 $\pm$ 0.1	2.0 $\pm$ 0.2	131 $\pm$ 2
	1000	80 $\pm$ 6	19.6 $\pm$ 0.7	3188 $\pm$ 206	4.0 $\pm$ 0.2*	2.8 $\pm$ 0.2*	125 $\pm$ 10
	<i>P</i> -value	0.855	0.094	0.664	0.031*	0.100	0.689
Sandy	0	66 $\pm$ 2	14.7 $\pm$ 0.7	971 $\pm$ 9	1.0 $\pm$ 0.0	1.0 $\pm$ 0.0	52 $\pm$ 0
	80	63 $\pm$ 0	14.4 $\pm$ 1.3	967 $\pm$ 59	1.0 $\pm$ 0.0	1.1 $\pm$ 0.0	55 $\pm$ 3
	1000	65 $\pm$ 5	9.9 $\pm$ 0.9*	1074 $\pm$ 84	1.9 $\pm$ 0.1*	1.1 $\pm$ 0.1	63 $\pm$ 2*
	<i>P</i> -value	0.883	0.020*	0.194	0.035*	0.087	0.018*
Alum shale	0	182 $\pm$ 12	23.1 $\pm$ 2.0	4425 $\pm$ 57	13.7 $\pm$ 0.0	2.0 $\pm$ 0.1	95 $\pm$ 4
	80	171 $\pm$ 6	24.7 $\pm$ 0.9	4891 $\pm$ 24	12.2 $\pm$ 0.1	1.9 $\pm$ 0.1	103 $\pm$ 4
	1000	191 $\pm$ 16	29.8 $\pm$ 1.1*	4925 $\pm$ 463	15.9 $\pm$ 1.0	2.8 $\pm$ 0.2*	146 $\pm$ 8*
	<i>P</i> -value	0.762	0.015*	0.074	0.233	0.008*	0.004*
Submerged	0	113 $\pm$ 9	26.6 $\pm$ 1.8	2727 $\pm$ 261	300 $\pm$ 4	25.3 $\pm$ 1.7	485 $\pm$ 13
	80	126 $\pm$ 3	26.4 $\pm$ 1.8	2585 $\pm$ 162	322 $\pm$ 7	27.8 $\pm$ 0.1	513 $\pm$ 37
	1000	129 $\pm$ 4	37.4 $\pm$ 3.3*	2997 $\pm$ 252	310 $\pm$ 17	34.5 $\pm$ 1.2*	651 $\pm$ 49*
	<i>P</i> -value	0.115	0.074	0.825	0.795	0.021*	0.009*

**Table S3.** Biomass of plants grown in nutrient medium during 5-7 days treatment with or without  $K_2SiO_3$ . n=5,  $\pm$ SE. \*indicates significant difference  $P<0.05$  from the untreated plants.

Plant species	$K_2SiO_3$ , ( $\mu$ M)	Shoots			Roots			Whole plant			Shoot:whole plant (DW)
		DW (g)	FW(g)	DW:FW	DW (g)	FW(g)	DW:FW	DW (g)	FW(g)	DW:FW	
<i>Maize</i>											
	0	0.700 (0.252)	10.79 (3.97)	0.065 (0.002)	0.577 (0.077)	7.06 (1.48)	0.083 (0.013)	1.275 (0.273)	17.85 (5.21)	0.073 (0.007)	0.548 (0.089)
	5000	0.988 (0.251)	14.27 (3.34)	0.069* (0.002)	0.644 (0.041)	8.79 (1.08)	0.074 (0.006)	1.632 (0.274)	23.06 (4.32)	0.071 (0.002)	0.605 (0.056)
<i>Lettuce</i>											
	0	5.784 (1.344)	31.27 (9.65)	0.184 (0.021)	1.167 (0.235)	6.33 (1.58)	0.181 (0.017)	2.08 (0.28)	37.60 (11.0)	0.56 (0.07)	0.832 (0.081)
	1000	4.993 (1.194)	26.58 (9.52)	0.187 (0.020)	1.057 (0.216)	5.69 (1.65)	0.185 (0.019)	1.74 (0.38)	32.27 (11.1)	0.59 (0.05)	0.825 (0.042)
<i>Wheat</i>											
	0	2.626 (0.130)	6.69 (1.85)	0.069 (0.005)	0.940 (0.091)	4.33 (0.42)	0.082 (0.006)	0.826 (0.179)	11.02 (2.21)	0.075 (0.004)	0.559 (0.041)
	1000	2.683 (0.113)	6.98 (0.40)	0.075 (0.002)	0.608 (0.047)	4.77 (0.13)	0.090 (0.009)	0.956 (0.037)	11.75 (0.44)	0.081* (0.002)	0.548 (0.040)

**Table S4.** Biomass of plants grown in nutrient medium during three weeks treatment with or without K<sub>2</sub>SiO<sub>3</sub>. *P*-value indicates if weights increase/decrease with increased Si-treatment. n=5, ±SE. indicates significant difference *P*<0.05 from the untreated plants.

Plant species	Shoot			Root			Whole plant			Shoot: Whole plant	
	Si, μM	DW, g	FW, g	DW:FW	DW, g	FW, g	DW:FW	DW, g	FW, g	DW:FW	DW
<b>Wheat</b>											
		1.59	17.9	0.089	0.39	5.8	0.068	1.98	23.6	0.084	0.803
	0	(0.01)	(0.6)	(0.003)	(0.02)	(0.4)	(0.006)	(0.04)	(0.7)	(0.003)	(0.080)
		1.62	18.0	0.090	0.39	5.7	0.069	2.01	23.7	0.085	0.806
	100	(0.13)	(1.8)	(0.011)	(0.01)	(0.7)	(0.008)	(0.07)	(1.5)	(0.006)	(0.073)
		1.67	19.1	0.087	0.39	5.5	0.072	2.06	24.6	0.084	0.811
	500	(0.13)	(2.2)	(0.012)	(0.01)	(0.2)	(0.003)	(0.07)	(1.2)	(0.005)	(0.064)
		1.70*	18.8	0.090	0.40	5.7	0.071	2.11*	24.5	0.086	0.806
	1000	(0.01)	(2.0)	(0.01)	(0.02)	(0.6)	(0.008)	(0.04)	(1.5)	(0.006)	(0.018)
	<i>P</i> -value	<0.001*	0.216	0.846	0.819	0.544	0.387	0.038*	0.607	0.835	0.920
<b>Carrot</b>											
		0.74	7.4	0.100	0.52	5.2	0.100	1.26	12.6	0.100	0.587
	0	(0.02)	(0.4)	(0.006)	(0.05)	(0.5)	(0.014)	(0.05)	(0.6)	(0.006)	(0.041)
		0.80	8.1	0.099	0.49	4.8	0.102	1.29	12.9	0.100	0.620
	100	(0.08)	(0.5)	(0.011)	(0.05)	(0.4)	(0.012)	(0.07)	(0.5)	(0.007)	(0.032)
		0.77	7.6	0.101	0.53	5.3	0.101	1.30	12.9	0.101	0.592
	500	(0.02)	(0.8)	(0.011)	(0.05)	(0.7)	(0.016)	(0.05)	(0.9)	(0.008)	(0.051)
		0.79*	7.8	0.101	0.56	5.5	0.103	1.36	13.3	0.102	0.581
	1000	(0.01)	(1.0)	(0.013)	(0.07)	(0.6)	(0.016)	(0.07)	(0.9)	(0.008)	(0.022)
	<i>P</i> -value	0.075	0.297	0.557	0.402	0.472	0.737	0.051	0.084	0.341	0.904
<b>Lettuce</b>											
		3.86	20.6	0.188	0.87	4.5	0.193	4.73	25.0	0.189	0.816
	0	(0.09)	(2.7)	(0.025)	(0.00)	(0.1)	(0.005)	(0.05)	(1.4)	(0.011)	(0.035)
		3.93	20.4	0.192	0.82	4.3	0.194	4.75	24.7	0.193	0.827
	100	(0.34)	(2.4)	(0.028)	(0.04)	(0.0)	(0.010)	(0.19)	(1.2)	(0.012)	(0.058)
		4.05	21.3	0.190	0.83	4.2	0.197	4.88	25.5	0.191	0.830
	500	(0.28)	(0.3)	(0.013)	(0.07)	(0.1)	(0.017)	(0.22)	(0.2)	(0.009)	(0.018)
		4.15*	21.7	0.191	0.82	4.3	0.191	4.97*	26.0	0.191	0.835
	1000	(0.13)	(2.1)	(0.019)	(0.01)	(0.1)	(0.005)	(0.07)	(1.0)	(0.008)	(0.048)
	<i>P</i> -value	0.007*	0.205	0.289	0.044*	0.194	0.862	0.010*	0.182	0.794	0.154
<b>Pea</b>											
		2.78	22.0	0.126	1.28	11.4	0.112	4.05	33.4	0.121	0.686
	0	(0.25)	(0.6)	(0.012)	(0.07)	(0.0)	(0.006)	(0.18)	(0.4)	(0.005)	(0.061)
		2.95	23.2	0.127	1.39	12.8	0.108	4.34	36.1	0.120	0.680
	100	(0.16)	(0.6)	(0.008)	(0.08)	(1.4)	(0.013)	(0.14)	(1.6)	(0.007)	(0.024)
		3.00	22.7	0.132	1.48	13.9	0.107	4.48	36.6	0.123	0.670
	500	(0.28)	(1.9)	(0.017)	(0.09)	(1.9)	(0.016)	(0.21)	(2.4)	(0.010)	(0.025)
		2.91	22.5	0.129	1.47*	13.4	0.110	4.38	35.9	0.122	0.664
	1000	(0.25)	(2.5)	(0.018)	(0.10)	(0.2)	(0.008)	(0.19)	(1.6)	(0.008)	(0.045)
	<i>P</i> -value	0.176	0.690	0.351	0.032	0.071	0.395	0.220	0.246	0.637	0.666

**Table S5.** Concentrations of nutrients in shoots and roots of various plant species untreated and treated with K<sub>2</sub>SiO<sub>3</sub> during 5-7 days. n = 5 (maize and lettuce) and 10 (wheat) ± SE in brackets. \* indicates significant difference from the control.

Plant Part	N mg g <sup>-1</sup>	K mg g <sup>-1</sup>	Mg mg g <sup>-1</sup>	Ca mg g <sup>-1</sup>	P mg g <sup>-1</sup>	S mg g <sup>-1</sup>	Cl mg g <sup>-1</sup>	B μg g <sup>-1</sup>	Mn μg g <sup>-1</sup>	Fe μg g <sup>-1</sup>	Zn μg g <sup>-1</sup>	Cu μg g <sup>-1</sup>	Mo μg g <sup>-1</sup>	Si μg g <sup>-1</sup>
<i>Maize</i>														
Shoot														
0	55.4 (1.7)	19.6 (0.7)	3.1 (0.1)	2.4 (0.3)	1.6 (0.1)	3.4 (0.3)	2.3 (0.2)	3.1 (0.5)	230 (13)	264 (36)	16.5 (2.1)	9.3 (1.1)	0.18 (0.00)	120 (18)
5000	48.7* (1.8)	20.1 (1.1)	3.9 (0.1)	2.9 (0.0)	1.1* (0.2)	3.4 (0.3)	2.1 (0.0)	5.9* (0.9)	391* (20)	209 (6)	11.8 (1.1)	5.8* (0.1)	0.15 (0.01)	10294* (1544)
Root														
0	56.9 (1.3)	15.8 (1.6)	2.7 (0.0)	1.9 (0.2)	2.0 (0.1)	3.8 (0.2)	3.5 (0.1)	4.4 (0.7)	248 (1)	198 (21)	29.6 (3.6)	10.6 (0.9)	0.09 (0.00)	115 (17)
5000	52.1* (1.1)	16.0 (1.0)	2.7 (0.3)	1.5 (0.1)	1.6 (0.2)	3.7 (0.2)	3.3 (0.0)	7.5* (1.1)	381* (48)	173 (25)	35.0 (1.6)	18.4* (0.3)	0.09 (0.00)	14702* (2205)
<i>Lettuce</i>														
Shoot														
0	43.0 (0.2)	16.8 (0.7)	1.8 (0.1)	3.6 (0.3)	1.7 (0.1)	1.4 (0.2)	2.6 (0.2)	4.9 (0.7)	73 (8)	275 (32)	121 (1.5)	14.8 (1.9)	0.29 (0.04)	26 (6)
1000	35.7* (1.5)	16.1 (0.9)	2.0 (0.1)	4.0 (0.5)	1.0* (0.0)	1.5 (0.1)	2.7 (0.3)	6.8* (1.0)	94 (7)	268 (5)	94 (0.8)	12.0 (0.1)	0.30 (0.03)	882* (132)
Root														
0	46.7 (1.0)	14.9 (1.8)	1.7 (0.0)	2.9 (0.3)	1.9 (0.1)	1.7 (0.1)	4.0 (0.1)	10.6 (1.6)	101 (4)	154 (22)	158 (4)	26.4 (2.1)	0.12 (0.00)	31 (4)
1000	41.4* (1.5)	14.3 (1.5)	1.7 (0.0)	2.8 (0.0)	1.6 (0.1)	1.6 (0.1)	3.9 (0.5)	15.6 (2.3)	121* (1)	168 (5)	199* (1)	31.8 (1.9)	0.11 (0.01)	1776* (266)
<i>Wheat</i>														
Shoot														
0	37.4 (1.1)	12.6 (0.8)	0.9 (0.04)	1.9 (0.2)	2.0 (0.02)	1.6 (0.1)	3.2 (0.2)	2.1 (0.2)	64 (4)	157 (10)	85 (0.5)	8.2 (0.5)	0.21 (0.003)	24 (1)
1000	31.4* (2.3)	11.6 (0.2)	1.1 (0.06)	2.0 (0.07)	1.2* (0.0)	1.8 (0.05)	3.4 (0.03)	3.4* (0.07)	91* (6)	176 (8)	62 (0.1)	6.1 (0.6)	0.23 (0.02)	3535* (157)
Root														
0	41.3 (2.0)	11.8 (0.2)	0.9 (0.07)	1.5 (0.4)	2.2 (0.0)	1.8 (0.0)	4.8 (0.1)	4.6 (0.0)	92 (4)	89 (22)	101 (4)	14.5 (2.1)	0.09 (0.00)	26 (5)
1000	39.0 (5.0)	9.6 (0.1)	1.0 (0.0)	1.3 (0.0)	1.6 (0.0)	2.1 (0.0)	4.6 (0.5)	8.3* (0.0)	117* (1)	111 (5)	128* (1)	14.7 (1.9)	0.08 (0.01)	7798* (528)

**Table S6.**

Concentration of various nutrients in shoots and roots of various plant species untreated and treated with silicon for three weeks. *P*-value indicates if concentration of element increase/decrease with increased Si-treatment. *n* = 4,  $\pm$  SE in brackets. \*indicates significant difference from the control.

Plant	N	K	Mg	Ca	P	S	Cl	Mn	Fe	Zn	Cu	Mo	Si
Part	mg g <sup>-1</sup>	mg g <sup>-1</sup>	mg g <sup>-1</sup>	mg g <sup>-1</sup>	mg g <sup>-1</sup>	mg g <sup>-1</sup>	mg g <sup>-1</sup>	μg g <sup>-1</sup>	μg g <sup>-1</sup>	μg g <sup>-1</sup>	μg g <sup>-1</sup>	μg g <sup>-1</sup>	μg g <sup>-1</sup>
Si, μM													
Wheat													
Shoot													
0	39.4 (1.1)	11.9 (0)	1.01 (0.06)	1.9 (0.1)	2.0 (0.1)	1.9 (0.2)	3.4 (0.1)	62.3 (0.8)	159 (13)	92.9 (7.4)	8.18 (0.8)	0.21 (0)	21 (2)
100	38.8 (0.6)	11.5 (1.1)	1.05 (0.06)	2 (0.2)	2.1 (0.2)	1.7 (0.1)	3.2 (0.2)	73.4* (5.8)	176* (4)	68.1* (6.2)	7.05* (0.08)	0.216 (0.013)	2486* (244)
500	36.7 (0.7)	11.6 (0.2)	0.96 (0.03)	2 (0.1)	1.8 (0.1)	1.6* (0.1)	3.5 (0.3)	78* (5.8)	168 (14)	59.1* (0.3)	5.83* (0.15)	0.21 (0.007)	3711* (160)
1000	36.5* (0.5)	11.4 (0.4)	1.13* (0.01)	2.1 (0.1)	1.8* (0)	1.6* (0)	3.5 (0.2)	86* (1.4)	171* (6)	59.2* (4.1)	6.22* (0.3)	0.214 (0.007)	4008* (44)
<i>P</i> -value	0.032*	0.331	0.074	0.152	0.048*	0.041*	0.093	<0.001*	0.010*	<0.001*	<0.001*	0.681	<0.001*
Root													
0	38.9 (5.1)	11.4 (0.4)	0.94 (0.01)	1.4 (0.1)	2.2 (0.2)	2.7 (0.1)	4.9 (0.1)	102 (5.5)	87 (8)	102.7 (3.9)	15.29 (0.1)	0.1 (0.005)	36 (4)
100	39.0 (3.1)	9.5* (0.4)	1.02* (0.02)	1.4 (0)	2.1 (0)	2.5 (0.1)	4.7 (0.5)	124.8* (3.5)	112* (4)	124* (6.1)	14.47 (1)	0.105 (0.006)	3870* (152)
500	38.1 (4.3)	10.1* (0.1)	0.97 (0.01)	1.4 (0.1)	1.7 (0.2)	2.0* (0.1)	4.9 (0.1)	117.8* (6.8)	124* (7)	129.4* (9.5)	14.09 (1.09)	0.08* (0.004)	7045* (451)
1000	37.4 (2.1)	10* (0.3)	0.94 (0.02)	1.4 (0.1)	1.7 (0.2)	2.0* (0)	4.8 (0.4)	127.4* (5.5)	115* (4)	136* (4.3)	14.2* (0.35)	0.084* (0.005)	8439* (721)
<i>P</i> -value	0.051	0.040*	0.359	0.894	0.002	<0.001*	0.815	0.009*	0.013*	<0.001*	0.018*	0.025*	<0.001*
Carrot													
Shoot													
0	49.8 (0.2)	8.5 (0.6)	0.7 (0.02)	1.5 (0)	1.5 (0.1)	1.2 (0.1)	2.4 (0.1)	47.6 (0.4)	113 (3)	65.6 (6.3)	5.96 (0.28)	0.146 (0.009)	22 (2)
100	49.9 (4.0)	8.4 (0.4)	0.73 (0.06)	1.4 (0)	1.5 (0.1)	1.2 (0.1)	2.4 (0.1)	50 (2.7)	130* (0)	51.1* (2.7)	4.96* (0.46)	0.164 (0.004)	158* (4)
500	47.5 (6.7)	8.6 (0.5)	0.71 (0.05)	1.5 (0.1)	1.4 (0.1)	1.2 (0.1)	2.4 (0.2)	57.5* (4.4)	127* (11)	46.1* (0.2)	4.35* (0.21)	0.16 (0)	344* (17)
1000	46.3 (0.3)	8.3 (0.4)	0.81* (0.07)	1.5 (0.1)	1.3 (0.1)	1.0* (0.0)	2.4 (0.2)	66.4* (2.7)	131* (11)	42.3* (0.4)	4.4* (0.37)	0.155 (0.001)	586* (9)
<i>P</i> -value	0.045*	0.597	0.068	0.744	0.034*	0.100	0.911	<0.001*	0.002*	<0.001*	0.009*	0.117	<0.001*
Root													

	52.9	8.8	0.68	1.0	1.6	1.5	3.5	73.5	67	71.1	10.69	0.072	27
0	(4.6)	(0.7)	(0.04)	(0.1)	(0)	(0)	(0.2)	(2.1)	(6)	(1.1)	(0.9)	(0.003)	(1)
	52.8	7.2*	0.72	1.1	1.5	1.4	3.4	87.6*	84	89.3*	10.58	0.074	415*
100	(7.2)	(0.4)	(0)	(0)	(0.1)	(0)	(0.2)	(4.7)	(4)	(0.8)	(0.48)	(0.003)	(35)
	50.5	7.4*	0.69	1.1	1.3*	1.2*	3.4	84.7*	84	96*	10.27	0.059*	977*
500	(7.4)	(0)	(0)	(0.1)	(0.1)	(0)	(0.3)	(2.5)	(8)	(7)	(0.41)	(0.002)	(5)
	50.3	7.1*	0.70	1.3*	1.2*	1.2*	3.5	95.9*	85	95.6*	10.48	0.057*	1364*
1000	(5.4)	(0.3)	(0.01)	(0)	(0.1)	(0.1)	(0.1)	(9.2)	(6)	(6.9)	(0.45)	(0.002)	(46)
<i>P</i> -value	0.072	0.030*	0.572	0.014*	0.005*	0.009*	0.855	0.011*	0.022*	0.004*	0.124*	<0.001*	<0.001*
Lettuce													
Shoot													
	46.2	16.7	0.98	2.7	2.7	2.4	4.3	86.3	216	119.8	10.52	0.277	26
0	(3.0)	(0.9)	(0.04)	(0.1)	(0.1)	(0.2)	(0.1)	(5.4)	(7)	(3.4)	(0.77)	(0.007)	(1)
	44.9	15.8	1.03	2.7	2.8	2.3	4.4	94.5	230	97.1*	9.28*	0.287	96*
100	(0.1)	(1.3)	(0.06)	(0.1)	(0.2)	(0.1)	(0.3)	(8.2)	(15)	(2.1)	(0.61)	(0.012)	(7)
	44.3	16.1	1.01	2.7	2.5	2.3	4.6	110.2*	237*	82.7*	8.37*	0.301	512*
500	(2.2)	(0.7)	(0.04)	(0.2)	(0.1)	(0.2)	(0)	(3.8)	(19)	(4.1)	(0.55)	(0.014)	(16)
	42.9	15.3*	1.15*	2.8	2.4*	2.1	4.7*	121*	243*	82.9*	8.23*	0.305*	887*
1000	(1.0)	(0.4)	(0.03)	(0.2)	(0.2)	(0.1)	(0.3)	(11.7)	(9)	(1.5)	(0.39)	(0.016)	(60)
<i>P</i> -value	0.017*	0.047*	0.048*	0.356	0.038*	0.019*	0.010*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*
Root													
	47.3	14.9	1.02	1.7	2.7	2.7	5.8	116.7	110	122.3	17.4	0.117	31
0	(1.4)	(0.6)	(0.03)	(0)	(0.1)	(0.1)	(0.4)	(5.9)	(3)	(11.7)	(1.53)	(0.009)	(0)
	47.2	12.2*	1.04	1.7	2.5	2.5	5.8	144.7*	137*	149.7*	17.88	0.12	762*
100	(2.3)	(0.1)	(0.04)	(0)	(0.2)	(0)	(0.1)	(13.2)	(4)	(5.1)	(1.74)	(0.007)	(9)
	45.9	11.8*	1.02	1.8	2	2.2*	5.4	138.9*	140*	153.1*	17.29	0.098*	1528*
500	(5.7)	(0.9)	(0.05)	(0.2)	(0.2)	(0.1)	(0.1)	(11.9)	(1)	(12.2)	(0.6)	(0.007)	(57)
	45.6	12.2*	0.98	1.7	2	2.1*	5.5	159.5*	147*	160.4*	16.23	0.099*	1844*
1000	(0.5)	(0.9)	(0.01)	(0.1)	(0.2)	(0)	(0.2)	(8.9)	(13)	(6.7)	(0.45)	(0.004)	(165)
<i>P</i> -value	0.068	0.037*	0.153	0.804	<0.001*	<0.001*	0.046*	0.028*	<0.001*	<0.001*	0.084	0.092	<0.001*
Pea													
Shoot													
	66.5	17.2	1.47	2.8	2.8	2.3	4.7	93.6	235	134.7	11.58	0.294	19
0	(3.6)	(1.4)	(0.08)	(0.1)	(0.3)	(0.2)	(0.3)	(8)	(11)	(10.7)	(0.83)	(0.024)	(2)
	63.3	17.1	1.40	2.7	3.1*	2.5	4.7	104.5	260*	99.8*	9.82*	0.32	108*
100	(7.8)	(0.3)	(0.07)	(0)	(0)	(0.2)	(0.2)	(6.4)	(10)	(1.4)	(0.41)	(0.009)	(3)
	62.4	16.5)	1.39	2.7	2.8	2.5	5.1*	114.5*	260*	87.5*	8.56*	0.318	355*
500	(2.4)	(1)	(0.06)	(0.1)	(0.1)	(0.1)	(0.2)	(7.5)	(23)	(2.5)	(0.21)	(0.005)	(18)
	61	17.1	1.63	2.7	2.6	2.6*	5.2*	134*	255*	87.2*	8.54*	0.319	641*
1000	(4.8)	(1.7)	(0.08)*	(0)	(0)	(0)	(0.1)	(0.7)	(2)	(1.5)	(0.37)	(0.014)	(16)
<i>P</i> -value	0.036*	0.243	0.216	0.385	0.470	0.033*	0.026*	<0.001*	0.058	<0.001*	<0.001*	0.192	<0.001*

Root													
	62.2	15.6	1.85	1.9	2.4	2.6	5.8	125.8	115	129.1	19.4	0.128	21
0	(0.4)	(0.3)	(0.11)	(0)	(0)	(0)	(0.5)	(6.4)	(1)	(8.1)	(0.37)	(0.000)	(1)
	60.5	12.2*	1.78	1.7*	2.2	2.5	5.8	153.3*	139*	150.8*	19.12	0.123	549*
100	(7.3)	(1)	(0.01)	(0)	(0.2)	(0.2)	(0.5)	(6.5)	(11)	(12)	(1.82)	(0.008)	(48)
	60.7	12.2*	1.87	1.8	2.2	2.0*	6	152.7*	156*	165.1*	17.91*	0.096*	1070*
500	(7.8)	(0.1)	(0.05)	(0.1)	(0.1)	(0.1)	(0.2)	(13.8)	(8)	(13.1)	(0.14)	(0.008)	(71)
	60.2	12.3*	1.80	1.8	2.2	2.0*	6	161.6*	152*	160.7*	17.32*	0.097*	1477*
1000	(1.1)	(0.1)	(0.05)	(0)	(0)	(0.2)	(0.4)	(0.3)	(7)	(14.6)	(1.33)	(0.002)	(48)
<i>P</i> -value	0.078	0.059	0.261	0.125	0.064	0.008*	0.098	0.004*	0.002*	0.031*	<0.001*	0.015*	<0.001*



**Table S7**

Net accumulation (total uptake of element per g of root DW) of various elements in maize, wheat and lettuce untreated and treated with silicon for 5-7 days. n = 5 (maize and lettuce) or 10 (wheat)  $\pm$  SE in brackets. \* indicates significant difference from the control.

Plant	N	K	Mg	Ca	P	S	Cl	B	Mn	Fe	Zn	Cu	Mo	Si
Si, $\mu$ M	mg g <sup>-1</sup>	mg g <sup>-1</sup>	mg g <sup>-1</sup>	mg g <sup>-1</sup>	mg g <sup>-1</sup>	mg g <sup>-1</sup>	mg g <sup>-1</sup>	$\mu$ g g <sup>-1</sup>	$\mu$ g g <sup>-1</sup>	$\mu$ g g <sup>-1</sup>	$\mu$ g g <sup>-1</sup>	$\mu$ g g <sup>-1</sup>	$\mu$ g g <sup>-1</sup>	mg g <sup>-1</sup>
Maize														
0	12.4 (1.2)	3.96 (0.42)	0.65 (0.06)	0.40 (0.06)	0.49 (0.04)	0.79 (0.08)	0.63 (0.06)	8.1 (1.0)	526 (49)	463 (64)	49 (6)	21 (2)	0.30 (0.02)	0.26 (0.03)
5000	12.7 (0.8)	4.68* (0.34)	0.97* (0.07)	0.60* (0.04)	0.33* (0.03)	0.91 (0.07)	0.65 (0.03)	16.5* (1.6)	980* (80)	517 (40)	33 * (4)	27* (1)	0.32 (0.02)	30.49* (3.14)
Lettuce														
0	26.0 (0.20)	9.84 (0.09)	1.09 (0.09)	2.10 (0.22)	1.05 (0.10)	0.91 (0.1)	1.72 (0.15)	34.8 (4.2)	462 (44)	1433 (175)	757 (50)	88 (7)	1.55 (0.14)	0.16 (0.02)
1000	21.0* (0.19)	9.03* (0.01)	1.10 (0.09)	2.20 (0.21)	0.66* (0.06)	0.88 (0.09)	1.69 (0.20)	47.7* (5.9)	565* (49)	1517 (117)	643* (40)	99 (10)	1.52 (0.16)	5.94* (0.74)
Wheat														
0	14.6 (0.9)	4.70 (0.61)	0.36 (0.33)	0.69 (0.10)	0.76 (0.04)	0.64 (0.01)	1.38 (0.15)	10.5 (0.98)	271 (14)	528 (42)	338 (20)	37 (4)	0.70 (0.04)	0.10 (0.01)
1000	17.7 (1.1)	6.06 (0.42)	0.58 (0.01)	1.01* (0.06)	0.68* (0.02)	1.00* (0.09)	1.98* (0.21)	23.3 (1.31)	519* (32)	587 (51)	303 (28)	42 (1)	1.10* (0.08)	23.40* (1.41)

**Table S8.**

Net accumulation of various elements in wheat, carrot, pea and lettuce untreated and treated with  $K_2SiO_3$  for three weeks. *P*-value indicates if concentration of element increase/decrease with increased Si-treatment.  $n = 4 \pm SE$  in brackets. Asterisk (\*) means significant difference from the control.

Plant	Si, $\mu M$	N	K	Mg	Ca	P	S	Cl	Mn	Fe	Zn	Cu	Mo	Si
		$\mu g/g$	$\mu g/g$	$\mu g/g$	$\mu g/g$	$\mu g/g$	$\mu g/g$	$\mu g/g$	$\mu g/g$	$\mu g/g$	$\mu g/g$	$\mu g/g$	$\mu g/g$	$\mu g/g$
Wheat														
	0	199 (7)	60 (2.5)	5.1 (0.3)	9.3 (0.5)	10.5 (0.5)	8.1 (0.6)	18.6 (0.8)	355 (17)	735 (54)	481 (28)	48.5 (3)	0.95 (0.04)	121 (9)
	100	200 (1)	57 (3.8)	5.4 (0.3)	9.8 (0.6)	10.8 (0.6)	9 (0.5)	18.1 (1.2)	429 (25)	841 (40)	406 (27)	43.7 (2.4)	1.00 (0.06)	14167* (951)
	500	194 (10)	59.1 (3.9)	5 (0.2)	9.8 (0.5)	9.3 (0.5)	8.9 (0.6)	19.8 (1.3)	448* (29)	838 (57)	380* (22)	38.8* (2.3)	0.97 (0.05)	22782* (1328)
	1000	191 (11)	57.9 (2.6)	5.7 (0.3)	10.1 (0.5)	9.4 (0.4)	10* (0.4)	19.6 (1.3)	490* (21)	837 (36)	386* (20)	40.4* (1.8)	0.99 (0.05)	25328* (1430)
<i>P</i> -value		0.101	0.752	0.133	0.046*	0.144	0.070	0.201	<0.001*	0.052	0.042*	0.042*	0.086	<0.001*
Carrot														
	0	124 (8)	21.1 (1.9)	1.7 (0.1)	3.2 (0.3)	3.7 (0.3)	3 (0.3)	6.9 (0.6)	142 (12)	229 (19)	165 (16)	19.2 (1.7)	1.01 (0.28)	59 (5)
	100	134 (7)	20.8 (2)	1.9 (0.2)	3.3 (0.3)	3.9 (0.4)	3.4 (0.3)	7.2 (0.7)	168 (17)	295 (28)	172 (17)	18.6 (2)	1.13 (0.34)	671* (64)
	500	120 (6)	20 (1.8)	1.7 (0.2)	3.2 (0.3)	3.3 (0.3)	3.3 (0.3)	7 (0.6)	168 (16)	269 (25)	163 (14)	16.6 (1.5)	1.31 (0.29)	1478* (129)
	1000	115 (9)	18.8 (2.1)	1.8 (0.2)	3.1 (0.3)	3.1 (0.4)	3.3 (0.4)	6.9 (0.8)	189 (20)	269 (31)	155 (17)	16.7 (2)	1.36 (0.28)	2188* (233)
<i>P</i> -value		0.088	0.031*	0.376	0.508	0.069	0.165	0.742	<0.001*	0.106	0.125	0.038	0.684	<0.001*
Lettuce														
	0	253 (15)	89.4 (3.3)	7.1 (0.3)	13.7 (0.4)	14.7 (0.4)	12 (0.6)	24.7 (1)	501 (21)	1072 (27)	656 (34)	64.3 (3.8)	1.35 (0.06)	147 (4)
	100	261 (9)	87.5 (6.6)	7.3 (0.5)	14.6 (1)	15.9 (1.3)	13.5 (0.9)	26.6 (2)	595 (53)	1234 (88)	612 (40)	62.1 (5.3)	1.49 (0.11)	1219* (87)
	500	262 (13)	90.5 (8.4)	7.8 (0.7)	15.1 (1.6)	14.4 (1.4)	13.5 (1.2)	27.7 (2.3)	677* (64)	1296* (119)	557 (53)	58.2 (5.2)	1.57 (0.14)	4030* (345)
	1000	264 (18)	90.2 (5.7)	8.9* (0.5)	15.8 (0.8)	14.4 (1)	14.7* (0.4)	29.6* (1.3)	775* (46)	1381* (72)	582 (18)	58.1 (2)	1.65* (0.06)	6357* (380)
<i>P</i> -value		0.130	0.618	<0.001*	0.027*	0.276	<0.001*	<0.001*	<0.001*	<0.001*	0.046	0.082	<0.001*	<0.001*

Pea													
	207	53	4.4	8.1	8.9	7.3	16.1	329	626	422	44.6	0.77	62
0	(16)	(4.1)	(0.3)	(0.6)	(0.7)	(0.6)	(1.4)	(27)	(44)	(35)	(3.4)	(0.06)	(5)
	195	48.4	4.4	8	9.2	7.8	15.7	375	690	362	39.9	0.80	778*
100	(5)	(3.4)	(0.3)	(0.5)	(0.6)	(0.7)	(1.1)	(25)	(49)	(25)	(3)	(0.05)	(56)
	187	45.7	4	7.8	7.9	7.7	16.3	385	683	343	35.3	0.74	1791*
500	(8)	(3.5)	(0.3)	(0.6)	(0.7)	(0.6)	(1.2)	(35)	(60)	(29)	(2.6)	(0.06)	(149)
	181	46.1	4.4	7.5	7.3	7.7	15.6	427	655	333	34.2	0.73	2745*
1000	(11)	(4.1)	(0.3)	(0.6)	(0.5)	(0.6)	(1.3)	(31)	(50)	(29)	(2.9)	(0.06)	(208)
<i>P</i> -value	0.039*	0.060	0.877	0.047*	0.057	0.101	0.681	<0.001*	0.095	<0.001*	<0.001*	0.062	<0.001*

