

Raw data of "Exogenous Se supplement enhanced cold tolerance in waxy maize by promoting photosynthesis, antioxidant defense and ASA-GSH metabolism"

Net photosynthetic rate ($\mu\text{mol m}^{-2} \text{S}^{-1}$)						
Growth Temperature	Se dose	Estimated value	Obs	HHMMSS	FTime	Photo (An)
NT	0	data_1	1	10:21:52	555.50	25.73
NT	0	data_2	2	10:21:53	556.50	24.94
NT	0	data_3	3	10:21:54	557.00	26.06
NT	0	data_4	4	10:21:56	559.00	23.92
NT	30	data_1	5	10:21:58	561.00	29.86
NT	30	data_2	25	10:57:37	335.00	25.00
NT	30	data_3	26	10:57:37	336.00	30.97
NT	30	data_4	27	10:57:38	336.50	26.93
NT	60	data_1	28	10:57:38	337.50	24.86
NT	60	data_2	29	10:57:39	338.50	30.78
NT	60	data_3	30	10:57:39	339.50	27.77
NT	60	data_4	31	10:58:53	342.00	25.79
NT	90	data_1	32	10:58:53	342.50	28.80
NT	90	data_2	33	10:58:54	343.50	25.74
NT	90	data_3	34	10:58:56	344.50	29.76
NT	90	data_4	35	10:58:56	348.00	25.68
LT	0	data_1	12	11:02:33	107.00	16.03
LT	0	data_2	13	11:02:34	107.50	15.03
LT	0	data_3	14	10:57:37	108.50	12.11
LT	0	data_4	15	10:57:37	109.50	15.44
LT	30	data_1	11	11:02:32	106.50	19.98
LT	30	data_2	16	10:57:38	166.50	16.41
LT	30	data_3	17	10:57:38	167.00	20.37
LT	30	data_4	18	10:57:39	168.00	18.39
LT	60	data_1	6	11:02:32	178.50	17.36
LT	60	data_2	7	11:02:32	179.00	21.34
LT	60	data_3	8	11:02:33	180.00	22.29
LT	60	data_4	9	11:02:34	181.00	18.27
LT	90	data_1	19	10:57:39	168.50	16.40
LT	90	data_2	20	11:02:32	269.50	18.45
LT	90	data_3	21	11:02:33	286.00	15.08
LT	90	data_4	22	11:02:34	287.00	19.90

NT=Normal temperature; LT= Low temperature.

Leaf chlorophyll contents (SPAD)

Temperature	Se dose	<i>data_1</i>	<i>data_2</i>	<i>data_3</i>	<i>data_4</i>
NT	0mg/L	35.80	40.00	25.95	40.23
NT	30mg/L	38.20	37.25	37.85	40.35
NT	60mg/L	37.40	35.90	36.65	40.92
NT	90mg/L	35.35	33.35	37.65	36.72
LT	0mg/L	23.50	26.50	25.75	24.61
LT	30mg/L	25.75	27.10	28.25	28.90
LT	60mg/L	30.10	29.10	26.10	30.94
LT	90mg/L	27.10	27.65	32.85	27.80

NT=Normal temperature; LT= Low temperature.

Leaf area, LA (cm²)

Temperature	Se dose	<i>data_1</i>	<i>data_2</i>	<i>data_3</i>	<i>data_4</i>
NT	0mg/L	30.04	34.31	38.76	40.39
NT	30mg/L	37.28	29.68	54.11	31.73
NT	60mg/L	38.03	35.96	49.69	14.06
NT	90mg/L	32.91	33.56	28.48	32.63
LT	0mg/L	25.43	27.26	28.28	23.49
LT	30mg/L	34.82	27.36	29.59	27.56
LT	60mg/L	34.99	29.79	28.55	30.08
LT	90mg/L	32.68	31.95	19.98	28.69

NT=Normal temperature; LT= Low temperature.

Shoot dry weight, SDW (g)

Temperature	Se dose	<i>data_1</i>	<i>data_2</i>	<i>data_3</i>	<i>data_4</i>
NT	0mg/L	0.56	0.61	0.60	0.61
NT	30mg/L	0.67	0.74	0.61	0.74
NT	60mg/L	0.59	0.77	0.72	0.77
NT	90mg/L	0.68	0.72	0.74	0.72
LT	0mg/L	0.40	0.36	0.42	0.36
LT	30mg/L	0.43	0.48	0.43	0.48
LT	60mg/L	0.33	0.31	0.35	0.31
LT	90mg/L	0.42	0.37	0.41	0.37

NT=Normal temperature; LT= Low temperature.

Leaf H₂O₂ (μmole g⁻¹ FW)

Temperature	Se dose	<i>data_1</i>	<i>data_2</i>	<i>data_3</i>	<i>data_4</i>
NT	0mg/L	10.21	7.64	8.39	6.32
NT	30mg/L	8.53	6.57	9.48	10.25
NT	60mg/L	7.02	10.53	8.31	11.50
NT	90mg/L	10.61	9.05	8.46	9.41
LT	0mg/L	20.24	17.70	16.06	19.89
LT	30mg/L	15.14	13.85	17.23	15.57
LT	60mg/L	16.46	9.46	12.56	10.37
LT	90mg/L	10.47	13.63	11.65	18.35

NT=Normal temperature; LT= Low temperature.

Leaf O₂⁻ content(nmol g⁻¹ FW)

Temperature	Se dose	<i>data_1</i>	<i>data_2</i>	<i>data_3</i>	<i>data_4</i>
NT	0mg/L	6.32	5.20	4.65	6.59
NT	30mg/L	5.39	4.83	6.39	5.08
NT	60mg/L	6.03	6.24	4.85	5.80
NT	90mg/L	7.03	6.30	6.40	5.58
LT	0mg/L	15.32	14.02	18.71	17.10
LT	30mg/L	12.23	15.60	11.27	14.23
LT	60mg/L	10.09	8.22	9.30	12.03

LT	90mg/L	12.03	10.51	11.16	9.59
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NT=Normal temperature; LT= Low temperature.

Leaf membrane stability index (MSI)

Growth Temperature	Se dose	Estimated value	The conductivity value($\mu\text{s cm}^{-1}$)		
			C1 (40°C)	C2 (100°C)	MSI
NT	0	data_1	21.3	118.5	82.03
NT	0	data_2	24.5	105.1	76.69
NT	0	data_3	13.7	95.7	85.68
NT	0	data_4	20.5	73.3	72.03
NT	30	data_1	31.9	106.6	70.08
NT	30	data_2	15.6	92.3	83.10
NT	30	data_3	14.7	125.4	88.28
NT	30	data_4	23.4	113.1	79.31
NT	60	data_1	28.9	133.4	78.34
NT	60	data_2	15.7	118.5	86.75
NT	60	data_3	21.4	131.7	83.75
NT	60	data_4	23.4	102.9	77.26
NT	90	data_1	26.9	122.7	78.08
NT	90	data_2	18.8	104.8	82.06
NT	90	data_3	25.5	124.8	79.57
NT	90	data_4	22.1	119.6	81.52
LT	0	data_1	21.4	86.5	75.26
LT	0	data_2	36.5	78.8	53.68
LT	0	data_3	19.9	62.8	68.31
LT	0	data_4	24.5	53.5	54.21
LT	30	data_1	37.3	94.6	60.57
LT	30	data_2	25.7	124.5	79.36
LT	30	data_3	30	85.4	64.87
LT	30	data_4	28.5	104.9	72.83
LT	60	data_1	24.6	121.8	79.80
LT	60	data_2	31.5	80.2	60.72
LT	60	data_3	22.9	121.5	81.15
LT	60	data_4	33	130.3	74.67
LT	90	data_1	28.5	130.4	78.14
LT	90	data_2	36.9	101	63.47
LT	90	data_3	27.8	112.5	75.29
LT	90	data_4	28.2	85.9	67.17

NT=Normal temperature; LT= Low temperature.

AsA content nmol g⁻¹ FW

Temperature	Se dose	<i>data_1</i>	<i>data_2</i>	<i>data_3</i>	<i>data_4</i>
NT	0mg/L	4.22	4.41	3.53	5.37
NT	30mg/L	4.75	3.76	4.02	4.71
NT	60mg/L	5.42	4.02	3.37	5.42
NT	90mg/L	3.48	4.18	5.17	5.37
LT	0mg/L	4.59	5.59	5.43	4.71
LT	30mg/L	6.28	6.08	4.57	5.15
LT	60mg/L	7.87	7.57	5.59	6.74
LT	90mg/L	6.48	6.38	6.17	5.97

NT=Normal temperature; LT= Low temperature.

GSH content (μmol g⁻¹ FW)

Temperature	Se dose	<i>data_1</i>	<i>data_2</i>	<i>data_3</i>	<i>data_4</i>
NT	0mg/L	0.3758	0.3099	0.3999	0.2883
NT	30mg/L	0.3437	0.3329	0.3664	0.4357
NT	60mg/L	0.3723	0.3580	0.3929	0.3572
NT	90mg/L	0.3951	0.3072	0.4997	0.3667
LT	0mg/L	0.3527	0.3623	0.3849	0.3770
LT	30mg/L	0.4725	0.4607	0.4669	0.4948
LT	60mg/L	0.5271	0.5689	0.5648	0.5322
LT	90mg/L	0.4902	0.4512	0.4770	0.5031

NT=Normal temperature; LT= Low temperature.

GSSG (mmol g⁻¹ FW)

Temperature	Se dose	<i>data_1</i>	<i>data_2</i>	<i>data_3</i>	<i>data_4</i>
NT	0mg/L	0.0400	0.0330	0.0444	0.0307
NT	30mg/L	0.0410	0.0423	0.0496	0.0379
NT	60mg/L	0.0382	0.0369	0.0368	0.0328
NT	90mg/L	0.0374	0.0317	0.0480	0.0530
LT	0mg/L	0.0402	0.0437	0.0404	0.0374
LT	30mg/L	0.0471	0.0414	0.0493	0.0513
LT	60mg/L	0.0638	0.0542	0.0558	0.0541
LT	90mg/L	0.0470	0.0423	0.0441	0.0491

NT=Normal temperature; LT= Low temperature.

SOD activity (U mg⁻¹ FW)

Temperature	Se dose	<i>data_1</i>	<i>data_2</i>	<i>data_3</i>	<i>data_4</i>
NT	0mg/L	37.06	45.81	41.06	39.81
NT	30mg/L	41.46	46.64	44.46	46.64
NT	60mg/L	48.86	49.47	43.86	50.47
NT	90mg/L	43.06	49.81	43.06	48.81
LT	0mg/L	49.43	55.26	48.39	53.47
LT	30mg/L	55.30	54.21	51.44	53.70
LT	60mg/L	58.06	63.55	60.21	55.85
LT	90mg/L	57.86	54.21	55.59	55.21

NT=Normal temperature; LT= Low temperature.

CAT activity (U mg⁻¹ FW)

Temperatur	Se dose	<i>data_1</i>	<i>data_2</i>	<i>data_3</i>	<i>data_4</i>
NT	0mg/L	0.34	0.33	0.29	0.33
NT	30mg/L	0.35	0.33	0.39	0.36
NT	60mg/L	0.28	0.33	0.31	0.31
NT	90mg/L	0.34	0.37	0.38	0.40
LT	0mg/L	0.39	0.35	0.32	0.34
LT	30mg/L	0.47	0.42	0.40	0.40
LT	60mg/L	0.45	0.57	0.49	0.47
LT	90mg/L	0.43	0.37	0.42	0.39

NT=Normal temperature; LT= Low temperature.

APX activity $\mu\text{mol min}^{-1} \text{g}^{-1}$ protei

Temperatur	Se dose	<i>data_1</i>	<i>data_2</i>	<i>data_3</i>	<i>data_4</i>
NT	0mg/L	6.90	6.63	7.07	6.94
NT	30mg/L	8.53	7.55	6.32	7.99
NT	60mg/L	7.33	7.55	7.89	9.95
NT	90mg/L	8.63	7.55	8.49	7.70
LT	0mg/L	8.57	8.47	10.17	9.24
LT	30mg/L	12.42	9.54	13.58	10.78
LT	60mg/L	13.52	12.52	12.04	13.68
LT	90mg/L	13.29	10.56	12.47	11.05

NT=Normal temperature; LT= Low temperature.

GR activity $\mu\text{mol min}^{-1} \text{g}^{-1}$ protei

Temperatur	Se dose	<i>data_1</i>	<i>data_2</i>	<i>data_3</i>	<i>data_4</i>
NT	0mg/L	6.90	6.63	7.07	6.94
NT	30mg/L	8.53	7.55	6.32	7.99
NT	60mg/L	7.33	7.55	7.89	9.95
NT	90mg/L	8.63	7.55	8.49	7.70
LT	0mg/L	8.57	8.47	10.17	9.24
LT	30mg/L	12.42	9.54	13.58	10.78
LT	60mg/L	13.52	12.52	12.04	13.68
LT	90mg/L	13.29	10.56	12.47	11.05

NT=Normal temperature; LT= Low temperature.

The relative expression of *SOD4A*

Growth Temperature	Se dose	Estimated value	gene ct	gene mean	β -tubulin ct	β -tubulin mean	Relative expression
NT	0	data_1	24.39	24.42	23.06	23.13	0.97
NT	0	data_2	24.17	24.42	23.08	23.13	1.15
NT	0	data_3	24.45	24.42	23.18	23.13	1.01
NT	0	data_4	22.43	24.42	22.10	23.13	1.94
NT	30	data_1	22.59	24.42	22.06	23.13	1.70
NT	30	data_2	22.64	24.42	22.18	23.13	1.78
NT	30	data_3	25.11	24.42	24.40	23.13	1.50
NT	30	data_4	25.18	24.42	24.40	23.13	1.43
NT	60	data_1	24.46	24.42	24.43	23.13	2.40
NT	60	data_2	23.51	24.42	22.89	23.13	1.59
NT	60	data_3	23.24	24.42	22.89	23.13	1.92
NT	60	data_4	23.50	24.42	22.92	23.13	1.63
NT	90	data_1	25.43	24.42	24.70	23.13	1.47
NT	90	data_2	25.41	24.42	24.78	23.13	1.58
NT	90	data_3	24.94	24.42	24.85	23.13	2.29
NT	90	data_4	26.65	24.42	26.16	23.13	1.74
LT	0	data_1	26.88	24.42	26.46	23.13	1.82
LT	0	data_2	26.90	24.42	26.29	23.13	1.60
LT	0	data_3	27.36	24.42	26.74	23.13	1.59
LT	0	data_4	27.99	24.42	27.31	23.13	1.52
LT	30	data_1	27.11	24.42	27.31	23.13	2.81
LT	30	data_2	26.52	24.42	26.74	23.13	2.86
LT	30	data_3	26.43	24.42	26.63	23.13	2.80
LT	30	data_4	26.95	24.42	27.03	23.13	2.57
LT	60	data_1	22.77	24.42	23.15	23.13	3.19
LT	60	data_2	23.18	24.42	23.52	23.13	3.09
LT	60	data_3	23.17	24.42	23.66	23.13	3.42
LT	60	data_4	22.20	24.42	22.95	23.13	4.11
LT	90	data_1	23.51	24.42	23.62	23.13	2.63
LT	90	data_2	22.60	24.42	22.66	23.13	2.54
LT	90	data_3	23.55	24.42	23.76	23.13	2.84
LT	90	data_4	22.94	24.42	23.33	23.13	3.22

NT=Normal temperature; LT= Low temperature.

The relative expression of *CAT3*

Growth Temperature	Se dose	Estimated value	gene ct	gene mean	β -tubulin ct	β -tubulin mean	Relative expression
NT	0	data_1	22.18	22.22	23.06	23.13	0.98
NT	0	data_2	21.28	22.22	23.08	23.13	1.84
NT	0	data_3	22.25	22.22	23.18	23.13	1.00
NT	0	data_4	20.90	22.22	22.10	23.13	1.21
NT	30	data_1	20.35	22.22	22.06	23.13	1.74
NT	30	data_2	19.87	22.22	22.18	23.13	2.62
NT	30	data_3	22.56	22.22	24.40	23.13	1.90
NT	30	data_4	22.46	22.22	24.40	23.13	2.03
NT	60	data_1	23.15	22.22	25.03	23.13	1.95
NT	60	data_2	21.59	22.22	23.29	23.13	1.72
NT	60	data_3	20.98	22.22	22.89	23.13	1.99
NT	60	data_4	20.94	22.22	22.92	23.13	2.09
NT	90	data_1	22.14	22.22	23.70	23.13	1.56
NT	90	data_2	22.39	22.22	23.78	23.13	1.39
NT	90	data_3	22.49	22.22	24.05	23.13	1.56

NT	90	data_4	23.56	22.22	25.16	23.13	1.60
LT	0	data_1	24.82	22.22	26.59	23.13	1.81
LT	0	data_2	24.78	22.22	26.29	23.13	1.51
LT	0	data_3	26.88	22.22	27.97	23.13	1.13
LT	0	data_4	26.38	22.22	27.81	23.13	1.42
LT	30	data_1	26.08	22.22	28.41	23.13	2.65
LT	30	data_2	24.93	22.22	27.17	23.13	2.51
LT	30	data_3	24.32	22.22	26.93	23.13	3.24
LT	30	data_4	24.78	22.22	27.03	23.13	2.51
LT	60	data_1	21.41	22.22	23.95	23.13	3.07
LT	60	data_2	21.30	22.22	23.77	23.13	2.94
LT	60	data_3	21.35	22.22	23.88	23.13	3.06
LT	60	data_4	20.19	22.22	22.99	23.13	3.69
LT	90	data_1	21.34	22.22	23.47	23.13	2.33
LT	90	data_2	20.32	22.22	22.66	23.13	2.69
LT	90	data_3	20.94	22.22	23.31	23.13	2.74
LT	90	data_4	21.32	22.22	23.63	23.13	2.63

NT=Normal temperature; LT= Low temperature.

The relative expression of APX1

<i>Growth Temperature</i>	<i>Se dose</i>	<i>Estimated value</i>	<i>gene ct</i>	<i>gene mean</i>	<i>β-tubulin ct</i>	<i>β-tubulin mean</i>	<i>Relative expression</i>
NT	0	data_1	22.05	22.16	23.06	23.13	1.03
NT	0	data_2	22.84	22.16	23.08	23.13	0.60
NT	0	data_3	22.27	22.16	23.18	23.13	0.96
NT	0	data_4	20.69	22.16	22.10	23.13	1.35
NT	30	data_1	20.46	22.16	22.06	23.13	1.55
NT	30	data_2	20.51	22.16	22.18	23.13	1.63
NT	30	data_3	23.02	22.16	24.40	23.13	1.32
NT	30	data_4	23.10	22.16	24.40	23.13	1.25
NT	60	data_1	22.68	22.16	24.43	23.13	1.71
NT	60	data_2	21.29	22.16	22.89	23.13	1.55
NT	60	data_3	21.37	22.16	22.89	23.13	1.47
NT	60	data_4	21.21	22.16	22.92	23.13	1.67
NT	90	data_1	23.10	22.16	24.70	23.13	1.54
NT	90	data_2	22.38	22.16	23.48	23.13	1.09
NT	90	data_3	22.44	22.16	23.55	23.13	1.10
NT	90	data_4	23.60	22.16	25.20	23.13	1.54
LT	0	data_1	24.84	22.16	26.46	23.13	1.56
LT	0	data_2	24.68	22.16	26.29	23.13	1.56
LT	0	data_3	26.33	22.16	27.97	23.13	1.59
LT	0	data_4	26.37	22.16	27.81	23.13	1.38
LT	30	data_1	23.54	22.16	25.91	23.13	2.62
LT	30	data_2	25.44	22.16	27.47	23.13	2.08
LT	30	data_3	23.64	22.16	25.93	23.13	2.49
LT	30	data_4	24.77	22.16	27.03	23.13	2.44
LT	60	data_1	21.06	22.16	23.55	23.13	2.87
LT	60	data_2	21.00	22.16	23.52	23.13	2.92
LT	60	data_3	21.09	22.16	23.26	23.13	2.30
LT	60	data_4	20.48	22.16	23.25	23.13	3.47
LT	90	data_1	21.76	22.16	23.58	23.13	1.80
LT	90	data_2	21.57	22.16	23.56	23.13	2.02
LT	90	data_3	21.27	22.16	23.36	23.13	2.17
LT	90	data_4	21.21	22.16	23.63	23.13	2.73

The relative expression of *gsr1*

Growth Temperature	Se dose	Estimated value	gene ct	gene mean	β -tubulin ct	β -tubulin mean	Relative expression
NT	0	data_1	32.66	32.71	23.06	22.94	1.13
NT	0	data_2	32.76	32.71	23.18	22.94	1.14
NT	0	data_3	31.76	32.71	22.10	22.94	1.08
NT	0	data_4	31.02	32.71	22.06	22.94	1.76
NT	30	data_1	33.89	32.71	24.40	22.94	1.22
NT	30	data_2	32.33	32.71	22.89	22.94	1.25
NT	30	data_3	32.04	32.71	22.89	22.94	1.54
NT	30	data_4	32.24	32.71	22.92	22.94	1.37
NT	60	data_1	34.10	32.71	24.70	22.94	1.29
NT	60	data_2	35.13	32.71	26.16	22.94	1.75
NT	60	data_3	35.51	32.71	26.46	22.94	1.65
NT	60	data_4	35.40	32.71	26.29	22.94	1.58
NT	90	data_1	37.43	32.71	27.91	22.94	1.19
NT	90	data_2	36.13	32.71	27.17	22.94	1.76
NT	90	data_3	35.68	32.71	26.93	22.94	2.02
NT	90	data_4	36.70	32.71	27.03	22.94	1.07
LT	0	data_1	32.63	32.71	23.66	22.94	1.74
LT	0	data_2	31.51	32.71	22.45	22.94	1.63
LT	0	data_3	32.02	32.71	22.52	22.94	1.21
LT	0	data_4	31.47	32.71	22.66	22.94	1.96
LT	30	data_1	31.66	32.71	23.36	22.94	2.78
LT	30	data_2	32.10	32.71	23.63	22.94	2.47
LT	30	data_3	31.63	32.71	23.29	22.94	2.71
LT	30	data_4	31.28	32.71	22.77	22.94	2.40
LT	60	data_1	29.64	32.71	21.47	22.94	3.05
LT	60	data_2	32.67	32.71	24.64	22.94	3.33
LT	60	data_3	32.65	32.71	24.56	22.94	3.21
LT	60	data_4	32.46	32.71	24.46	22.94	3.42
LT	90	data_1	36.14	32.71	28.29	22.94	3.79
LT	90	data_2	37.06	32.71	28.66	22.94	2.58
LT	90	data_3	36.57	32.71	28.28	22.94	2.79
LT	90	data_4	30.37	32.71	22.03	22.94	2.70

NT=Normal temperature; LT= Low temperature.