

Additional file 13: Alteration in transcript levels of selected genes identified in leaves by microarrays and verified by RT-qPCR. Changes in expression levels in lower epidermis+spongy paerenchyma (ESP) and upper epidermis+palisade paerenchyma (EPP) of leaves of 17-day old transgenic plants line 4 versus wild type Beta grown for one week in the presence of 5 μ M Zn.

↑ - upregulated, ↓ - downregulated, “blank” - similar transcript level

In cases where transcripts were detected by Real-time PCR in one tissue type only, fold change could not be calculated. The results are then shown as arrows indicating the course of change.

All accessions numbers are from NCBI.

Accession number	Gene product	Microarray				RT-qPCR	
		ESP		EPP		ESP	EPP
		Fold change	p-value	Fold change	p-value	Fold change	Fold change
<i>Metal transporters and uptake facilitators:</i>							
AY562196	Natural resistance-associated macrophage protein 2 (<i>NRAMP2</i>)			↑ 1.3	0.0128031	↓	↑
AY196092	Natural resistance-associated macrophage protein 3 (<i>NRAMP3</i>)	↑ 1.2	0.000992745	↑ 1.2	0.000972334		↑
AY224079	Ferric-chelate reductase (<i>FRO1</i>)	↑ 1.5	1.23958e ⁻⁰⁰⁵	↑ 1.8	0.000162441	↓	↑
<i>Transcription factors:</i>							
FJ647190	Basic region/leucine zipper motif transcription factor 44 (<i>bZIP44</i>)	↑ 17.4	1.32234e ⁻⁰¹¹	↑ 11.3	3.52978e ⁻⁰¹²	↑	↑
<i>Ethylene pathway:</i>							
NM_001247220	Ethylene receptor 1 (<i>ETR1</i>)			↑ 1.3	0.000651449	↓	↑
U38666	Never-ripe ethylene receptor (<i>NR</i>)	↑ 1.3	0.00391666	↑ 1.6	0.00014986	↓	↓
NM_001247095	1-Aminocyclopropane-1-carboxylate oxidase 1 (<i>ACO1</i>)	↑ 171.5	3.99087e ⁻⁰¹¹	↑ 165.7	4.21099e ⁻⁰¹¹	↓	↑
XM_004247652	1-Aminocyclopropane-1-carboxylate oxidase 3 (<i>ACO3</i> , <i>E8</i>)	↑ 2.1	0.00247568	↓ -1.7	0.000165337	↑	↓

NM_001246999	1-Aminocyclopropane-1-carboxylate oxidase 4 (<i>ACO4</i>)	↑ 5.6	2.01684e ⁻⁰⁰⁶	↑ 5.5	2.1916e ⁻⁰⁰⁶	↓	↑
NM_001247709	1-Aminocyclopropane-1-carboxylate oxidase 6 (<i>ACO6</i>)			↑ 1.5	1.15738e ⁻⁰⁰⁶	↓	↓
<i>Cell wall modifications:</i>							
U70677	Pectin methylesterase 1 (<i>PMEU1</i>)	↑ 1.3	9.51282e ⁻⁰⁰⁷	↑ 1.7	2.85617e ⁻⁰⁰⁹	↑	↑
NM_001246929	Xyloglucan endotransglucosylase/hydroxylase 1 (<i>XTH1</i>)	↓ -3.2	2.13345e ⁻⁰⁰⁷	↓ -2.7	7.03154e ⁻⁰⁰⁷	↓	↓
NM_001247543	Xyloglucan endotransglucosylase/hydroxylase 3 (<i>XTH3</i>)	↑ 12.0	8.1219e ⁻⁰⁰⁹	↑ 1,8	0.000299818		↑
NM_001245746	Xyloglucan endotransglucosylase/hydroxylase 7 (<i>XTH7</i>)	↓ -2.1	0.000310681	↓ -2.8	2.92569e ⁻⁰⁰⁵	↑	↓
U13055	endo-1,4-beta-D-glucanase (<i>Cel2</i>)			↓ -6.9	4.99676e ⁻⁰⁰⁶	↓	↓
U78526	endo-1,4-beta-D-glucanase (<i>Cel5</i>)	↓ -4.6	2.86733e ⁻⁰⁰⁶			↓	↑
AF308936	endo-1,4-beta-D-glucanase (<i>Cel7</i>)	↑ 25.1	2.63431e ⁻⁰¹¹	↑ 2.2	1.72706e ⁻⁰⁰⁶	↑	↑