

Supplementary Data

Supplementary Table S1 Sequences of oligonucleotide primer pairs used for cloning the gene sequences of *PtaATPS1/2*, *PtaATPS3/4*, *PtabTub* and *PtaANT*.

Gene	Primer orientation	Oligonucleotide sequence sequence (5' → 3')
<i>PtaATPS1/2</i>	forward	GATAAGTGAAGGATGGGCGA
	reverse	CTATTAGCCGCCTCACCAAA
<i>PtaATPS3/4</i>	forward	GTTGATCGACCCAGATGGTG
	reverse	ACAGGTTCTGGGACTTTGCC
<i>PtabTub</i>	forward	GCCATTCTTTAGGAGGAGGG
	reverse	GAGCTCTGGGACAGTCAAGG
<i>PtaANT</i>	forward	AGGCTTCTCTCTCACCCC
	reverse	TAGGAGAGATCTGCCTCGGA

Supplementary Table S2 Oligonucleotide primer sequences used for qRT-PCR analysis and resulting PCR fragment lengths. If primer pairs were established by other authors, the corresponding reference is added. The primer sequences for *PtabTub* and *PtaANT* were taken from Gutierrez et al. (2008) and modified for *Populus tremula* x *P. alba* sequences. bp: base pairs.

Gene	Primer orientation	Oligonucleotide sequence (5' → 3')	Fragment length	Reference
PtaSULTR1;2	forward	CAGTTTCGATATCCTTTGCCAAGATTC	248 bp	
	reverse	GGTCTGGCCTGATTTGTTTACTAGCTC		
PtaSULTR1;1	forward	TTTATAACCCGTGCAGATAAGGAC	113 bp	Dürr et al., 2010 ¹
	reverse	CCTTTTAGCAAATGGTCACCAC		
PtaSULTR4;1	forward	GGCCTGCGTATATATGATATCTGTC	114 bp	Dürr et al., 2010 ¹
	reverse	AAACCTTACGACAAGTATTGCATTG		
PtaSULTR4;2	forward	GAGGCAGGGCGTAGATTG	132 bp	Dürr et al., 2010 ¹
	reverse	GGAAGCAAGCCTTACAATGC		
PtaATPS1/2	forward	GGGTGGCAGCATATGATACTGTGG	197 bp	
	reverse	GCCTCTTCTGCCTGCAACCTC		
PtaATPS3/4	forward	TGAGGAGGTGCTTAAGGATGGTGTCC	179 bp	
	reverse	CAACTGGATGGCTCATTCCAGCTG		
PtaAPR	forward	AAGGAACCATGGCTTGTGGTGCTCT	138 bp	
	reverse	CTGATCGCCATCTGCCCTGAATTTT		
PtaEflb	forward	TGAGGATCTCTGGTGTGCGAAG	100 bp	Wildhagen et al., 2010 ¹
	reverse	GTCTCAGCAGATGGAGGAGTG		
PtabTub *	forward	GATGCTTACATTCTCCGTCTTTCCC	222 bp	Gutierrez et al. 2008 ² (modified)
	reverse	GTGACCCAGACATTGTAGCAGAAA		
PtaANT *	forward	TCTGTCTGTTATGCCCTCA	120 bp	Gutierrez et al. 2008 ² (modified)
	reverse	CCACCTAGGAAGTCCTCCAGT		

¹ see references

² Gutierrez L, Mauriat M, Pelloux J, Bellini C, Van Wuytswinkel O. 2008. Towards a systematic validation of references in real-time RT-PCR. *Plant Cell* 20, 1734–1735.

Supplementary Table S3 Contents of all analysed plant hormones in fine roots of poplar treated with sulphur depletion and of control plants (0 day). Data presented are means and standard deviations of 5 replicates where each replicate consisted of two pooled plants. Small letters indicate significant differences at $p < 0.05$ between different time-points. dw: dry weight; n.d.: not detected

Days of sulphur depletion	0d		2d		5d		9d		14d		21d	
Plant hormone [pmol* g ⁻¹ dw]	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
tZ	1.87 ^a	0.96	2.11 ^a	0.47	1.68 ^a	0.56	2.37 ^a	0.40	1.61 ^a	0.38	2.70 ^a	1.02
tZR	2.64 ^a	0.98	3.58 ^{ab}	1.06	5.70 ^b	1.27	3.59 ^{ab}	1.08	3.43 ^a	0.92	3.88 ^{ab}	1.20
tZRP s	7.73 ^a	4.38	8.22 ^a	4.08	8.82 ^a	2.49	5.85 ^a	1.44	7.18 ^a	5.84	12.12 ^a	4.13
tZ7G	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.74	0.41
tZ9G	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
tZOG	78.83 ^{ab}	30.28	74.41 ^a	8.61	113.3 ^b	14.12	80.01 ^{ab}	13.01	78.76 ^{ab}	27.07	90.93 ^{ab}	13.04
tZROG	3.69 ^a	2.37	3.22 ^a	0.61	2.39 ^a	0.15	3.03 ^a	1.60	2.43 ^a	1.02	4.35 ^a	1.38
tZRP sOG	0.33 ^a	0.19	0.09 ^b	0.01	0.21 ^{ab}	0.07	0.32 ^a	0.13	0.20 ^{ab}	0.09	0.39 ^a	0.06
cZ	8.94 ^{ab}	3.54	13.72 ^a	8.26	3.06 ^b	1.84	4.13 ^{ab}	1.26	6.10 ^{ab}	6.51	4.50 ^{ab}	1.16
cZR	3.93 ^a	1.52	5.65 ^a	0.96	5.68 ^a	1.19	4.29 ^a	0.74	4.03 ^a	1.13	3.91 ^a	1.24
cZRP s	13.45 ^{abc}	1.73	15.17 ^{bc}	2.67	19.77 ^c	7.00	11.00 ^{ab}	1.87	9.53 ^a	1.91	9.21 ^a	0.90
cZOG	34.00 ^{ab}	7.50	26.10 ^a	5.90	30.15 ^{ab}	4.75	32.54 ^{ab}	5.58	30.57 ^{ab}	4.82	40.27 ^b	4.57
cZROG	18.37 ^{ab}	4.91	14.82 ^a	4.15	20.73 ^{ab}	2.88	20.65 ^{ab}	7.24	16.87 ^a	4.08	27.39 ^b	3.54
cZRP sOG	1.24 ^a	0.46	0.48 ^b	0.12	1.66 ^a	0.52	1.57 ^a	0.54	1.55 ^a	1.10	2.55 ^a	0.65
iP	4.11 ^a	1.29	4.71 ^a	1.43	4.43 ^a	1.59	3.20 ^a	0.79	2.74 ^a	0.50	4.25 ^a	0.79
iPR	2.98 ^a	0.88	5.63 ^a	3.72	2.81 ^a	0.44	3.00 ^a	1.03	2.59 ^a	0.52	2.30 ^a	0.23
iPRP s	47.79 ^{ab}	9.00	34.52 ^a	8.85	57.79 ^b	18.66	38.48 ^{ab}	7.29	28.71 ^a	4.75	46.91 ^{ab}	5.78
iP7G	6.51 ^{ab}	2.45	11.18 ^b	7.86	3.75 ^{ac}	1.42	3.96 ^{abc}	0.77	3.21 ^{ac}	1.37	2.55 ^c	0.71
iP9G	0.23 ^a	0.06	0.18 ^a	0.07	0.28 ^a	0.13	0.18 ^a	0.06	0.16 ^a	0.05	0.31 ^a	0.04
DZ	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
DZR	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.11 ^a	0.05	0.06 ^a	0.02	0.28 ^a	0.15
DZRP s	0.33 ^{ab}	0.16	0.26 ^a	0.07	0.44 ^{ab}	0.14	0.49 ^{ab}	0.17	0.51 ^a	0.70	2.78 ^b	1.33

DZ9G	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
IAA	733.5 ^a	210.8	806.2 ^a	171.2	1059 ^a	431.0	989.8 ^a	380.2	785.7 ^a	154.5	767.8 ^a	205.2
IAA1a	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
IA1le	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
IA1leu	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
IAAsp	394.6 ^a	169.4	n.d.	n.d.	1554 ^a	2080	733.4 ^a	386.1	332.5 ^a	166.5	1059 ^a	1090
IA1Trp	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
IA1Phe	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA1	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA3	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA4	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA7	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA8	28.29 ^{ab}	10.64	20.89 ^a	6.22	35.05 ^{ab}	12.29	n.d.	n.d.	n.d.	n.d.	50.26 ^b	4.77
GA9	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA12	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA19	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA20	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA24	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA44	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA53	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
ABA	271.6 ^a	44.61	125.1 ^b	40.61	157.5 ^{ab}	37.47	164.7 ^{ab}	27.31	259.9 ^{ab}	133.9	247.6 ^{ab}	40.26

Supplementary Table S4 Contents of all analysed plant hormones in young leaves of poplar treated with sulphur depletion and of control plants (0 day). Data presented are means and standard deviations of 5 replicates where each replicate consisted of two pooled plants. Small letters indicate significant differences at $p < 0.05$ between different time-points. dw: dry weight; n.d.: not detected

Days of sulphur depletion Plant hormone [pmol* g ⁻¹ dw]	0d		2d		5d		9d		14d		21d	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
tZ	4.15 ^a	0.49	5.08 ^{ab}	1.52	6.10 ^b	0.73	4.13 ^a	0.51	3.60 ^a	0.30	9.52 ^c	2.63
tZR	1.63 ^a	0.89	2.99 ^{bc}	1.23	4.94 ^c	1.20	1.97 ^{ab}	0.74	1.99 ^{ab}	0.26	2.93 ^b	0.95
tZRP s	7.36 ^a	0.75	12.44 ^{ab}	6.25	22.73 ^b	6.76	7.74 ^{ab}	1.24	6.53 ^a	0.98	10.69 ^{ab}	3.75
tZ7G	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
tZ9G	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
tZOG	67.95 ^a	10.20	72.92 ^a	11.13	70.06 ^a	7.35	68.98 ^a	18.10	69.70 ^a	4.64	62.04 ^a	26.16
tZROG	1.31 ^a	0.29	2.52 ^b	1.01	2.01 ^{ab}	0.49	1.39 ^a	0.22	1.34 ^a	0.09	1.95 ^{ab}	0.53
tZRPsOG	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
cZ	9.72 ^{ab}	2.91	18.39 ^{bc}	8.12	7.65 ^a	1.41	10.78 ^{ab}	3.99	9.63 ^{ab}	3.37	23.40 ^c	7.18
cZR	3.42 ^a	0.83	4.91 ^a	2.08	3.94 ^a	0.43	4.27 ^a	0.89	4.83 ^a	1.14	3.57 ^a	0.52
cZRP s	13.69 ^a	2.39	12.91 ^a	2.97	17.80 ^a	2.52	12.83 ^a	3.69	13.84 ^a	3.49	15.78 ^a	5.00
cZOG	23.54 ^a	2.75	23.70 ^a	2.69	21.54 ^a	0.95	26.08 ^a	2.68	24.13 ^a	1.59	85.63 ^a	162.3
cZROG	6.35 ^a	0.26	6.77 ^a	0.72	8.24 ^b	0.27	7.46 ^{ab}	0.66	7.15 ^{ab}	1.05	7.09 ^{ab}	0.40
cZRPsOG	0.59 ^{ad}	0.24	0.30 ^{ac}	0.11	1.43 ^b	0.58	0.30 ^{ac}	0.10	0.26 ^c	0.08	0.71 ^{bd}	0.23
iP	35.84 ^a	5.30	38.62 ^a	4.04	39.08 ^a	5.72	38.49 ^a	2.58	42.27 ^a	6.24	n.d.	n.d.
iPR	35.70 ^a	4.87	37.88 ^a	3.98	39.88 ^a	7.89	37.46 ^a	3.22	42.19 ^a	7.59	42.75 ^a	4.48
iPRP s	17.83 ^{ab}	2.07	17.24 ^a	3.32	22.90 ^b	4.25	18.02 ^{ab}	3.36	15.38 ^a	1.23	16.47 ^a	1.99
iP7G	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
iP9G	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
DZ	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
DZR	0.50 ^a	0.22	1.11 ^{abc}	0.34	1.47 ^{bc}	0.35	0.82 ^{ab}	0.39	1.01 ^{abc}	0.31	1.64 ^c	0.46
DZRP s	3.35 ^a	0.24	5.10 ^{ab}	1.07	7.09 ^b	2.33	3.96 ^{ab}	1.77	3.54 ^{ab}	0.65	5.28 ^{ab}	0.87

DZ9G	2.86 ^a	0.21	4.84 ^b	1.72	4.25 ^{ab}	0.84	3.33 ^{ab}	0.51	3.09 ^{ab}	0.24	5.22 ^b	0.61
IAA	1336 ^{ac}	89.33	1553 ^{ac}	255.9	2374 ^b	363.9	1417 ^c	166.8	993.8 ^d	180.0	926.6 ^d	120.4
IAA1a	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
IA1le	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
IA1leu	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
IAAsp	1061 ^a	454.2	1295 ^a	377.4	1333 ^a	208.0	737.7 ^a	356.5	1531 ^a	742.4	n.d.	n.d.
IA1Trp	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
IA1Phe	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA1	20.11 ^{ab}	3.15	20.01 ^{ab}	6.04	21.91 ^a	3.63	15.28 ^{ab}	4.80	20.39 ^{ab}	4.85	12.06 ^b	3.26
GA3	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA4	75.90 ^a	9.38	89.59 ^a	40.87	60.89 ^a	1.46	72.72 ^a	26.84	n.d.	n.d.	n.d.	n.d.
GA7	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA8	244.6 ^a	47.31	181.1 ^a	49.51	197.2 ^a	20.97	211.6 ^a	61.55	173.9 ^a	58.26	185.9 ^a	58.63
GA9	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA12	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA19	213.8 ^a	16.63	159.6 ^{ab}	37.07	144.4 ^b	26.96	223.0 ^a	49.67	125.6 ^b	15.79	171.2 ^{ab}	43.67
GA20	70.83 ^a	27.48	89.49 ^a	21.08	90.65 ^a	22.64	59.09 ^a	5.94	50.64 ^a	3.07	n.d.	n.d.
GA24	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA44	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA53	46.90 ^a	2.90	29.01 ^a	6.53	45.62 ^a	19.66	43.54 ^a	11.35	36.58 ^a	15.98	32.72 ^a	11.46
ABA	23990 ^a	2693	16735 ^{ab}	4606	21519 ^b	4324	18809 ^{ab}	4460	12627 ^b	3772	13039 ^b	2108

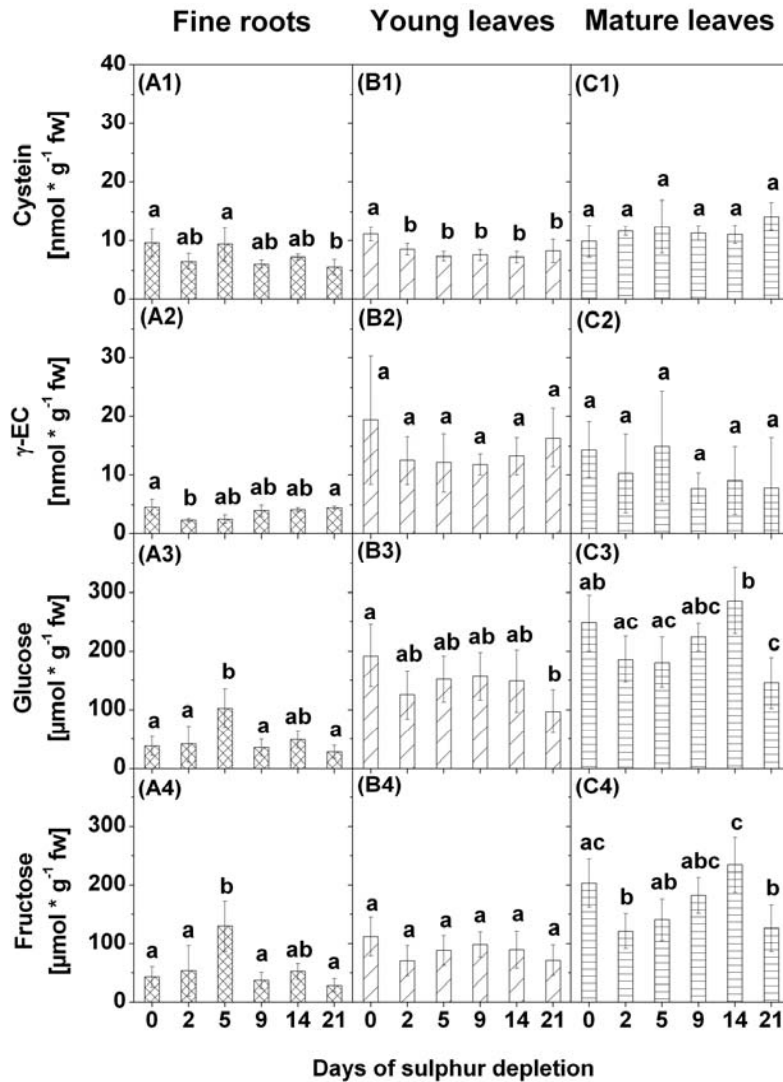
DZ9G	3.20 ^a	0.47	4.62 ^{ab}	1.50	5.15 ^b	1.32	3.24 ^a	0.85	4.38 ^{ab}	0.51	6.16 ^b	0.62
IAA	716.7 ^b	397.2	500.1 ^b	142.9	397.2 ^a	134.5	445.8 ^a	104.2	n.d.	n.d.	368.3 ^a	86.17
IAAla	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
IAIle	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	388.5	95.38	n.d.	n.d.
IALeu	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
IAAsp	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	614.0 ^a	231.1	1858 ^a	979.4	1414 ^a	1357
IATrp	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
IAPhe	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA1	13.89 ^a	5.94	8.93 ^a	3.89	8.95 ^a	5.36	4.47 ^a	1.63	6.86 ^a	2.07	n.d.	n.d.
GA3	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA4	45.01 ^a	21.73	74.05 ^a	19.28	66.63 ^a	1.92	99.71 ^a	53.21	n.d.	n.d.	30.33 ^a	19.02
GA7	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA8	98.79 ^a	25.50	86.20 ^{ab}	27.60	84.24 ^{ab}	26.63	95.46 ^{ab}	51.74	50.77 ^{ab}	8.29	48.81 ^b	14.64
GA9	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA12	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	1676 ^a	593.8	1943 ^a	918.0
GA19	43.88 ^a	10.57	35.37 ^a	13.76	37.05 ^a	11.72	31.56 ^a	13.70	25.61 ^a	4.52	26.83 ^a	10.87
GA20	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA24	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA44	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA53	36.91 ^a	5.23	20.10 ^b	8.88	17.22 ^b	5.10	26.67 ^{ab}	5.51	18.03 ^b	7.12	15.00 ^b	6.85
ABA	7945 ^a	1275	7344 ^a	2133	4731 ^{ab}	1870	5759 ^{ab}	2128	4982 ^{ab}	1032	3839 ^b	1096

DZRPs	2.12 ^a	0.65	1.46 ^a	0.38	2.65 ^a	1.83	2.92 ^a	0.97	2.19 ^a	0.62	2.26 ^a	0.28
DZ9G	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
IAA	197.1 ^a	111.3	148.4 ^a	78.76	1061 ^a	1130	280.7 ^a	60.42	190.3 ^a	74.20	390.7 ^a	134.2
IAAla	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
IAIle	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
IALeu	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
IAAsp	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
IATrp	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
IAPhe	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA1	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA3	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA4	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA7	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA8	29.44 ^a	7.27	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA9	1024 ^a	1036	412.8 ^a	61.83	4135 ^a	6761	3299 ^a	5675	523.8 ^a	183.7	933.2 ^a	1188
GA12	2399	345.7	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA19	32.13 ^a	20.34	15.12 ^a	4.52	53.83 ^a	27.66	20.93 ^a	13.71	20.88 ^a	5.58	36.54 ^a	22.77
GA20	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA24	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA44	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA53	199.8 ^a	162.3	167.6 ^a	106.7	731.2 ^a	383.8	136.5 ^a	26.79	253.4 ^a	99.07	292.2 ^a	255.0
ABA	36401 ^a	15698	23839 ^a	4281	40624 ^a	17559	26088 ^a	9982	38805 ^a	18050	45814 ^a	25212

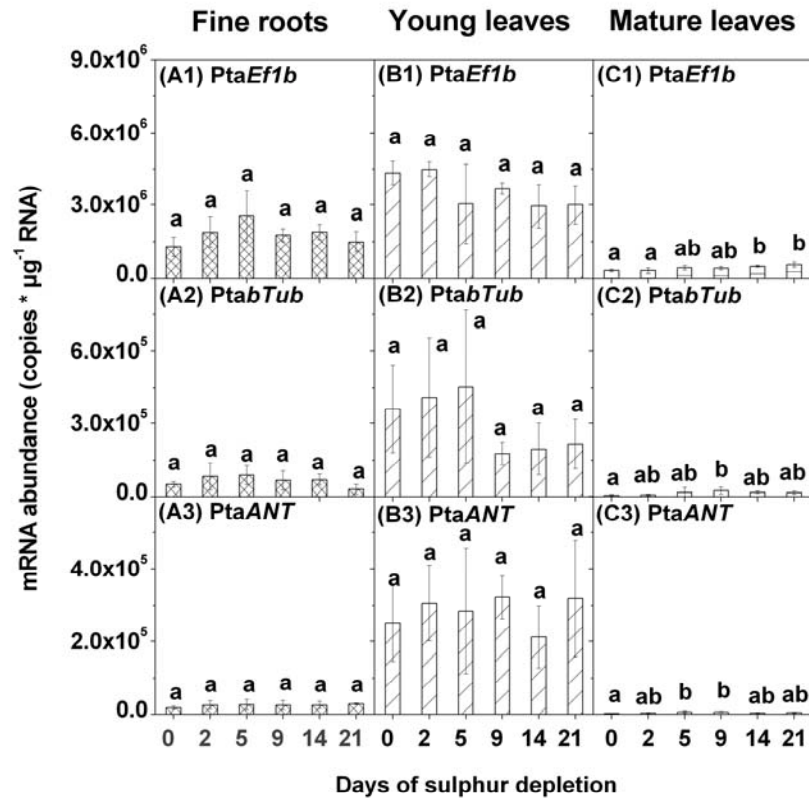
Supplementary Table S7 Contents of all analysed plant hormones in phloem exudates of poplars treated with sulphur depletion and of control plants (0 day). Data presented are means and standard deviations of 5 replicates where each replicate consisted of two pooled plants. Small letters indicate significant differences at $p < 0.05$ between different time-points. fw: fresh weight n.d.: not detected

Days of sulphur depletion Plant hormone [pmol* g ⁻¹ bark fw]	0d		2d		5d		9d		14d		21d	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
tZ	1.27 ^a	0.14	0.68 ^b	0.35	0.77 ^b	0.24	0.42 ^b	0.14	0.87 ^{ab}	0.10	0.84 ^{ab}	0.37
tZR	3.51 ^a	0.65	3.58 ^a	1.56	4.28 ^a	2.37	0.83 ^a	0.26	3.00 ^a	1.23	2.67 ^a	1.54
tZRPs	0.18 ^{ab}	0.02	0.23 ^a	0.09	0.18 ^{ab}	0.07	0.09 ^b	0.03	0.17 ^{ab}	0.08	0.24 ^a	0.10
tZ7G	0.08	0.03	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
tZ9G	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
tZOG	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
tZROG	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
tZRPsOG	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
cZ	1.52 ^a	0.11	1.15 ^{ab}	0.61	0.92 ^{ab}	0.27	0.71 ^b	0.27	1.22 ^{ab}	0.26	1.35 ^{ab}	0.52
cZR	22.28 ^a	3.29	24.57 ^a	11.06	25.03 ^a	10.91	10.98 ^a	1.94	23.84 ^a	6.42	26.08 ^a	14.59
cZRPs	19.77 ^a	4.87	13.16 ^{ab}	6.68	11.24 ^{ab}	4.27	6.01 ^b	1.58	10.86 ^{ab}	2.67	14.95 ^{ab}	9.12
cZOG	3.27 ^{ab}	0.50	7.83 ^a	3.08	1.81 ^b	1.30	2.91 ^b	1.85	3.41 ^{ab}	1.33	3.76 ^{ab}	2.74
cZROG	1.04 ^a	0.17	1.15 ^a	0.47	0.53 ^a	0.26	0.59 ^a	0.10	0.93 ^a	0.18	0.99 ^a	0.49
cZRPsOG	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
iP	1.17 ^a	0.10	1.37 ^{ab}	1.13	0.76 ^{ab}	0.26	0.44 ^b	0.11	1.11 ^{ab}	0.20	1.00 ^{ab}	0.44
iPR	4.58 ^{ab}	0.66	6.62 ^a	2.51	5.66 ^a	2.28	1.88 ^b	0.49	6.10 ^a	2.08	6.25 ^a	3.42
iPRPs	1.67 ^a	0.15	1.49 ^{ab}	0.74	1.02 ^{ab}	0.49	0.63 ^b	0.22	1.24 ^{ab}	0.21	1.64 ^{ab}	0.88
iP7G	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
iP9G	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
DZ	0.18 ^a	0.04	n.d.	n.d.	0.09 ^a	0.03	0.11 ^a	0.12	0.08 ^a	0.02	0.18 ^a	0.07

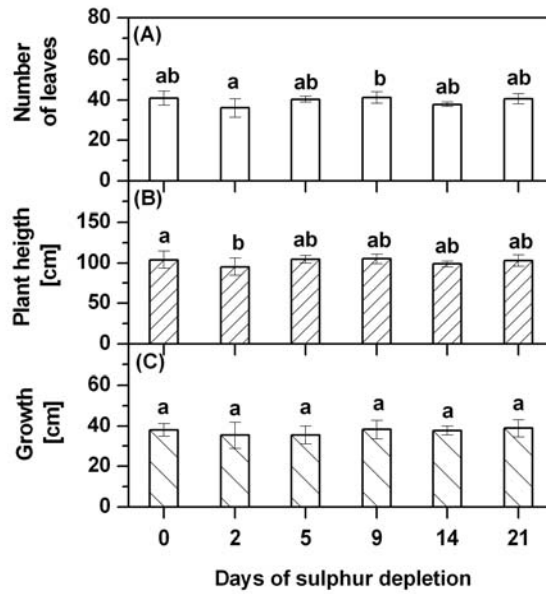
DZR	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
DZRPs	0.24 ^a	0.05	0.18 ^{ab}	0.09	0.14 ^{ab}	0.04	0.10 ^b	0.03	0.15 ^{ab}	0.03	0.21 ^{ab}	0.11
DZ9G	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
IAA	335.1 ^a	39.94	443.1 ^a	266.9	266.1 ^a	128.78	189.2 ^a	36.3	229.7 ^a	56.2	288.4 ^a	161.0
IAA1a	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
IA1le	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
IA1eu	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
IA1sp	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
IA1Trp	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
IA1Phe	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA1	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA3	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA4	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA7	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA8	12.27 ^{ab}	1.17	11.54 ^a	2.79	11.77 ^{ab}	4.36	3.54 ^b	1.93	7.50 ^{ab}	3.46	7.85 ^{ab}	4.46
GA9	4.47 ^a	1.96	4.78 ^a	4.52	1.97 ^a	1.82	0.93 ^a	0.75	3.89 ^a	1.51	3.60 ^a	2.11
GA12	243.8 ^a	50.97	340.4 ^a	193.3	301.2 ^a	142.5	143.2 ^a	58.23	362.0 ^a	187.5	279.2 ^a	148.6
GA19	20.28 ^a	3.12	14.39 ^{ab}	7.03	14.05 ^{ab}	6.16	7.19 ^b	1.50	10.37 ^b	3.06	11.30 ^{ab}	6.00
GA20	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA24	5.34 ^a	0.81	5.57 ^a	2.00	4.18 ^{ab}	2.38	1.86 ^b	0.33	2.58 ^{ab}	0.49	2.87 ^{ab}	0.88
GA44	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
GA53	76.30 ^a	9.17	66.92 ^{ab}	27.10	77.71 ^{ab}	33.82	21.59 ^b	4.83	62.56 ^{ab}	22.39	39.72 ^{ab}	19.80
ABA	2567 ^a	123.3	1690 ^{ab}	874.0	1858 ^{ab}	940.5	624.7 ^b	201.1	2035 ^{ab}	746.6	1452 ^{ab}	858.0



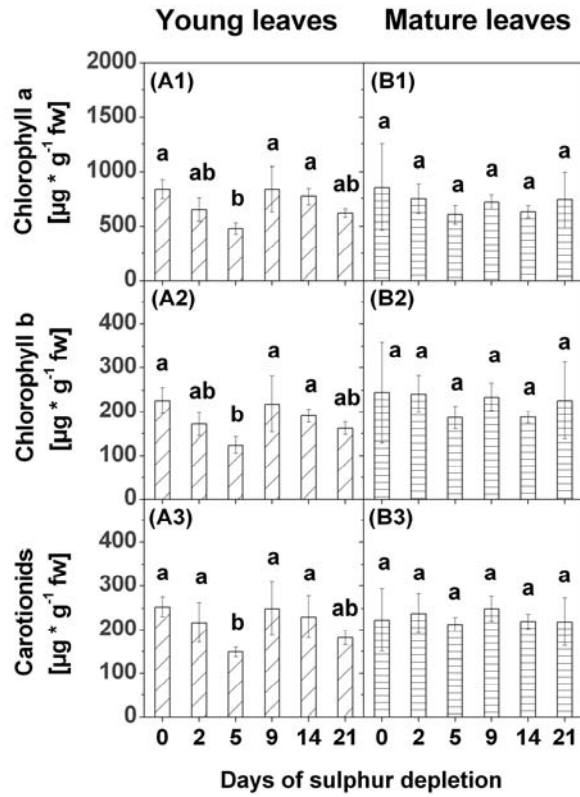
Supplementary Figure S1 Cysteine (1), γ -glutamyl-cysteine (γ -EC, 2), glucose (3) and fructose (4) contents in fine roots (A), young leaves (B) and mature leaves (C) of poplar treated with sulphur depletion and of control plants (day 0). Data presented are means including standard deviation of five replicates where each replicate consisted of two pooled plants. Small letters indicate significant differences at $p < 0.05$ between different time-points within one tissue. fw: fresh weight



Supplementary Figure S2 Changes in gene expression of three reference genes, i.e. *elongation factor 1 β* (*Ef1b*, 1), *β -tubulin* (*bTub*, 2) and *Aintegumenta* (*ANT*, 3), in fine roots (A), young leaves (B) and mature leaves (right) due to sulphur depletion treatment. Controls are represented by day 0. mRNA abundance was related to total RNA. Data presented are means including standard deviation of five replicates where each replicate consisted of two pooled plants. Small letters indicate significant differences at $p < 0.05$ between different time-points within one tissue.



Supplementary Figure S3 Leaf number, plant height and plant growth of poplar treated with sulphur depletion and of control plants (day 0). Leaf number and plant height were determined directly before harvest. The growth was calculated by the difference between initial (start of the experiment) and final (end of the experiment) plant height. Data presented are means including standard deviations of ten individual plants. Small letters indicate significant differences at $p < 0.05$.



Supplementary Figure S3 Contents of chlorophyll a (1), chlorophyll b (2) and carotinoids (3) in young (A) and mature leaves (B) of poplar treated with sulphur depletion and of control plants (day 0). Data presented are means including standard deviation of five replicates where each replicate consisted of two pooled plants. Small letters indicate significant differences at $p < 0.05$ between different time-points within one tissue. fw: fresh weight