

Supplementary materials

Table S1. The corresponding primers of qRT-PCR.

Gene ID	Forward Primer	Reverse Primer
ubiquitin	CCAGGACAAGGAAGGTATC	GACGAAGGACAAGGTGAA
Potri.013G152400	CTTCGTCGCCTCCTACAA	ATACCTCTTCTCACCCTACTG
Potri.014G168100	CACAACATCACACGCATA	GAGAGCCAGGACAGTAAT
Potri.007G103800	AGGTGATGTGAGTGGATA	GAAGTAGTCAACAACAAGTG
Potri.002G115100	TGCCATACTTTACCTCACA	AGTGAATGGCCATCTAGTCT
Potri.006G143200	CCTTCACTATCCTGCTCCT	TGCTCATCAACCTCCTCTT
Potri.001G106100	CAACTCCACATCAATCCA	ATTCCATCTCATCCATTCC
Potri.015G006200	GCCGCCATAATCCTTCTA	GCTACTGTTGTTGTTGTTGA
Potri.001G004600	AGCATTCACATAGGACAAG	GCATCATTCCATCAGGTT
Potri.003G083200	TGAGGTTCCAAGTAAGTG	AACGGTAGAGTCATAAGC
Potri.006G275900	ATCAGACCATTGAATCACAG	ATGATGTGTGTTGGATGGTG
Potri.001G009600	TGTGGAGCAATGTCTACT	AGTCTTCAGCAGTCTCAT
Potri.002G010000	CAAGCAGCAGCAACAATA	GGTCAATCTCCTCCAACA
Potri.002G028800	CCGGAGGTGTGAAGAAACCC	CGGTCTTGAAATCCTGAGCA
Potri.002G216400	CACTTCTCCTTCTCCTCTT	GCAGCCACAATCACAATA
Potri.003G192400	CGCTGTTGATGTTATTGAG	GATTCTATGAGGCTGATGA

Table S2. Gene expression level data enriched by GO in Diploid versus Tetraploid.

Gene ID	log2 (Tetra./Di.)	p_Value	TF Name	Gene Name	Gene Description
Potri.006G139600	-0.606125	0.03115	ERF	LHCA6	photosystem I light harvesting complex gene 6
Potri.005G061600	0.0147472	0.9791	–	PGSIP1	plant glycogenin-like starch initiation protein 1
Potri.007G107200	-0.508659	0.2634	–	PGSIP1	plant glycogenin-like starch initiation protein 1
Potri.014G029900	-0.88757	0.0262	–	PGSIP3	plant glycogenin-like starch initiation protein 3
Potri.005G187900	-0.119517	0.6781	–	PGSIP2	plant glycogenin-like starch initiation protein 2
Potri.005G033500	-2.46761	0.05005	–	PGSIP5	plant glycogenin-like starch initiation protein 5
Potri.013G049100	-0.158239	0.56355	–	PGSIP6	plant glycogenin-like starch initiation protein 6
Potri.002G126300	-0.613293	0.0417	ERF	AMY1	alpha-amylase-like
Potri.002G014300	-0.634207	0.0432	ERF	AMY2	alpha-amylase-like 2
Potri.010G092900	-0.705808	0.0262	ERF	AMY3	alpha-amylase-like 3
Potri.017G040800	-1.51778	0.0098	BES1	BMV1	beta-amylase 5
Potri.T101100	-2.17319	0.04575	BES1	BMV1	beta-amylase 5
Potri.014G083800	1.09341	0.01405	BES1	BMV9	beta-amylase 2
Potri.008G204200	-0.763526	0.01985	ERF	BMV3	beta-amylase 3
Potri.002G115100	3.19283	5.00E-05	GRF	GRF1	growth-regulating factor 1
Potri.007G007100	2.62602	0.0003	GRF	GRF1	growth-regulating factor 1
Potri.014G012800	6.71129	0.00075	GRF	GRF1	growth-regulating factor 1
Potri.014G007200	1.36454	0.0062	GRF	GRF1	growth-regulating factor 1
Potri.003G118100	3.15837	0.0039	GRF	GRF2	growth-regulating factor 2
Potri.006G115200	2.77471	0.00075	GRF	GRF3	growth-regulating factor 3
Potri.013G077500	4.30618	0.00045	GRF	GRF5	growth-regulating factor 5
Potri.018G065400	4.18526	0.0009	GRF	GRF5	growth-regulating factor 5
Potri.006G143200	5.1118	0.00315	GRF	GRF5	growth-regulating factor 5
Potri.015G006200	3.27162	5.00E-05	GRF	GRF7	growth-regulating factor 7
Potri.012G022600	0.891495	0.0036	GRF	GRF7	growth-regulating factor 7
Potri.001G114000	1.46587	0.01695	GRF	GRF7	growth-regulating factor 7
Potri.014G071800	4.11112	0.0007	GRF	GRF9	growth-regulating factor 9
Potri.003G174800	0.649822	0.0248	GATA	GATA1	GATA transcription factor 1
Potri.013G059600	2.58626	0.00045	GATA	GATA12	GATA transcription factor 12
Potri.008G213900	1.6391	0.0002	GATA	GATA15	GATA transcription factor 15
Potri.010G001300	1.35681	0.0025	GATA	GATA15	GATA transcription factor 15

Potri.005G122700	1.98633	0.027	GATA	GATA18	GATA type zinc finger transcription factor family protein
Potri.014G058600	inf	5.00E-05	GATA	GATA2	GATA transcription factor 2
Potri.005G117600	1.81828	0.00075	GATA	GATA5	GATA transcription factor 5
Potri.007G016600	0.906609	0.0084	GATA	GATA5	GATA transcription factor 5
Potri.008G038900	1.60946	5.00E-05	GATA	GATA9	GATA transcription factor 9
Potri.019G033000	5.17275	5.00E-05	GATA	GATA9	GATA transcription factor 9

Table S3. Gene expression level data enriched by KEGG in Diploid versus Tetraploid.

Gene ID	log2 (Tetra./Di.)	p_Value	TF Name	Gene Name	Gene Description
Potri.005G251000	-0.18004	0.55105	MYB_related	SBE2.1	starch branching enzyme 2.1
Potri.006G115100	-0.16965	0.58	MYB_related	SBE2.2	starch branching enzyme 2.2
Potri.015G012400	-0.40386	0.18475	FAR1	SSI	Glycogen/starch synthases, ADP-glucose type
Potri.017G084100	0.127635	0.6504	FAR1	SS2	starch synthase 2
Potri.004G014100	-0.31213	0.26525	FAR1	SS3	starch synthase 3
Potri.001G351800	-0.788	0.0075	FAR1	SS4	starch synthase 4
Potri.007G009600	-0.12573	0.68805	–	SS4	starch synthase 4
Potri.018G149500	-0.35255	0.2016	FAR1	SS4	starch synthase 4
Potri.018G025100	-0.60697	1	HD-ZIP	SPS1F	sucrose phosphate synthase 1F
Potri.018G124700	-1.16482	0.2869	HD-ZIP	SPS1F	sucrose phosphate synthase 1F
Potri.001G317600	-1.00935	0.0016	HD-ZIP	SPS3F	sucrose phosphate synthase 3F
Potri.013G095500	-0.95905	0.00825	HD-ZIP	SPS4F	Sucrose-phosphate synthase family protein
Potri.017G139100	1.0381	0.02135	HB-other	SUS5	sucrose synthase 5
Potri.006G199800	-0.49798	0.07715	EIL		Sucrose-6F-phosphate phosphohydrolase family protein
Potri.008G013300	-0.0572	0.8678	EIL		Sucrose-6F-phosphate phosphohydrolase family protein
Potri.016G066100	-0.12954	0.6764	EIL		Sucrose-6F-phosphate phosphohydrolase family protein
Potri.019G085800	-0.80294	0.09965	HD-ZIP	SUC2	sucrose-proton symporter 2
Potri.008G148100	0.066646	0.83915	HD-ZIP	SUC3	sucrose transporter 2
Potri.010G093600	0.163728	0.6578	HD-ZIP	SUC3	sucrose transporter 2
Potri.002G106900	-0.3222	0.3697	–	SUC4	sucrose transporter 4
Potri.011G122400	1.23466	0.0029	C2H2	PORA	protochlorophyllide oxidoreductase A
Potri.001G298300	inf	5.00E-05	ERF	GH3.1	Auxin-responsive GH3 family protein

Potri.007G050300	1.87002	0.01805	ERF	GH3.1	Auxin-responsive GH3 family protein
Potri.009G092900	1.14459	0.03785	ERF	GH3.1	Auxin-responsive GH3 family protein
Potri.001G176600	-0.9269	0.0163	STAT	GA3OX1	gibberellin 3-oxidase 1
Potri.014G020100	3.29638	5.00E-05	–		Gibberellin-regulated family protein

Table S4. Gene expression level data enriched by GO in Triploid versus Tetraploid.

Gene ID	log2 (Tetra./Tri.)	p_Value	TF Name	Gene Name	Gene Description
Potri.016G115200	-1.67895	0.0027	ERF	LHCB4.2	light harvesting complex photosystem II
Potri.011G126700	-1.33922	0.0018	ERF	LHCB3	light-harvesting chlorophyll B-binding protein 3
Potri.002G189300	-2.54208	5.00E-05	ERF	LHCB1.4	light-harvesting chlorophyll-protein complex II subunit B1
Potri.008G041000	-2.37652	5.00E-05	ERF	LHCA1	photosystem I light harvesting complex gene 1
Potri.003G171500	-1.06802	0.0155	ERF	LHCA2	photosystem I light harvesting complex gene 2
Potri.006G139600	-1.14915	5.00E-05	ERF	LHCA6	photosystem I light harvesting complex gene 6
Potri.014G029700	-0.84865	0.0054	ERF	LHCA5	photosystem I light harvesting complex gene 5
Potri.001G407100	-0.99926	0.0266	ERF	LHCB3	light-harvesting chlorophyll B-binding protein 3
Potri.008G067300	-1.24198	0.0226	ERF	LHCB4.3	light harvesting complex photosystem II
Potri.003G020400	-1.02067	0.0146	ERF	LHCB6	light harvesting complex photosystem II subunit 6
Potri.008G116800	-1.17078	0.0006	–	STN7	STT7 homolog STN7
Potri.010G129500	-0.74873	0.03525	–	STN7	STT7 homolog STN7
Potri.007G107200	-1.28556	0.0052	–	PGSIP1	plant glycogenin-like starch initiation protein 1
Potri.014G029900	-1.17233	0.0035	–	PGSIP3	plant glycogenin-like starch initiation protein 3
Potri.002G126300	0.808353	0.01045	ERF	AMY1	alpha-amylase-like
Potri.014G029400	0.884778	0.03645	ERF	AMY1	alpha-amylase-like
Potri.002G014300	-0.7705	0.0116	ERF	AMY2	alpha-amylase-like 2
Potri.010G092900	-1.24443	0.00045	ERF	AMY3	alpha-amylase-like 3
Potri.017G040800	-1.73635	0.0039	BES1	BMY1	beta-amylase 5
Potri.T101200	-2.94905	0.01795	BES1	BMY1	beta-amylase 5
Potri.006G070800	-0.70382	0.0171	MYB	ISA1	isoamylase 1
Potri.017G040800	-1.73635	0.0039	BES1	BMY1	beta-amylase 5
Potri.T101200	-2.94905	0.01795	BES1	BMY1	beta-amylase 5
Potri.008G174100	-2.4374	5.00E-05	BES1	BMY7	beta-amylase 1
Potri.001G087600	-0.97515	0.0009	BES1	BMY7	beta-amylase 1

Potri.010G062900	0.693005	0.01745	BES1	BMV7	beta-amylase 1
Potri.001G148900	0.992717	0.0085	—	BMV8	chloroplast beta-amylase
Potri.008G204200	0.761831	0.02	ERF	BMV3	beta-amylase 3
Potri.006G064300	-0.13797	0.65295	HD-ZIP	SPS1F	sucrose phosphate synthase 1F
Potri.018G025100	-0.23668	1	HD-ZIP	SPS1F	sucrose phosphate synthase 1F
Potri.018G124700	-0.60186	0.6123	HD-ZIP	SPS1F	sucrose phosphate synthase 1F
Potri.001G317600	-1.64113	5.00E-05	HD-ZIP	SPS3F	sucrose phosphate synthase 3F
Potri.017G057800	-5.49037	5.00E-05	HD-ZIP	SPS3F	sucrose phosphate synthase 3F
Potri.013G095500	-2.27249	5.00E-05	HD-ZIP	SPS4F	Sucrose-phosphate synthase family protein
Potri.006G067400	inf	0.0183	—	SAG14	blue-copper-binding protein
Potri.002G203500	1.11562	0.0362	—	SAG21	senescence-associated gene 21
Potri.010G182200	1.74678	5.00E-05	—	SAG20	senescence associated gene 20
Potri.009G086100	1.21925	0.0087	—	SAG101	senescence-associated gene 101
Potri.005G089100	inf	5.00E-05	BBR-BPC	SAG12	senescence-associated gene 12
Potri.006G089700	-1.35922	0.0065	C2H2	SAG13	senescence-associated gene 13
Potri.001G355100	1.49669	0.005	STAT	SRG1	senescence-related gene 1
Potri.001G355200	3.40878	0.02945	STAT	SRG1	senescence-related gene 1
Potri.001G381700	0.880694	0.04275	STAT	SRG1	senescence-related gene 1
Potri.017G063500	1.9301	0.0001	—	SRG3	senescence-related gene 3
Potri.001G061100	-1.19009	0.00665	—	SRG3	senescence-related gene 3
Potri.007G007100	3.01634	5.00E-05	GRF	GRF1	growth-regulating factor 1
Potri.014G012800	5.50007	5.00E-05	GRF	GRF1	growth-regulating factor 1
Potri.014G007200	1.24606	0.01045	GRF	GRF1	growth-regulating factor 1
Potri.003G118100	1.91234	0.00915	GRF	GRF2	growth-regulating factor 2
Potri.013G077500	3.77241	0.00015	GRF	GRF5	growth-regulating factor 5
Potri.018G065400	4.81358	0.0043	GRF	GRF5	growth-regulating factor 5
Potri.006G143200	1.7672	0.00475	GRF	GRF5	growth-regulating factor 5
Potri.015G006200	1.84394	0.00025	GRF	GRF7	growth-regulating factor 7
Potri.001G114000	2.44174	0.0016	GRF	GRF7	growth-regulating factor 7
Potri.014G071800	3.94321	0.0004	GRF	GRF9	growth-regulating factor 9
Potri.003G174800	0.625298	0.03205	GATA	GATA1	GATA transcription factor 1
Potri.013G059600	2.18492	0.0003	GATA	GATA12	GATA transcription factor 12
Potri.008G213900	1.35399	0.0019	GATA	GATA15	GATA transcription factor 15
Potri.005G122700	2.27629	0.0238	GATA	GATA18	GATA type zinc finger transcription factor family protein

Potri.014G058600	2.64115	0.03575	GATA	GATA2	GATA transcription factor 2
Potri.018G053600	-0.78108	0.00845	GATA	GATA21	GATA type zinc finger transcription factor family protein
Potri.002G110900	-0.78905	0.04975	—	GATA25	GATA-type zinc finger protein with TIFY domain
Potri.005G117600	1.35084	0.0048	GATA	GATA5	GATA transcription factor 5
Potri.019G033000	5.97087	0.0004	GATA	GATA9	GATA transcription factor 9
Potri.008G038900	1.05935	0.00075	GATA	GATA9	GATA transcription factor 9

Table S5. Gene expression level data enriched by KEGG in Triploid versus Tetraploid.

Gene ID	log2 (Tetra./Tri.)	p_Value	TF Name	Gene Name	Gene Description
Potri.015G012400	-1.09676	0.0005	FAR1	SSI	Glycogen/starch synthases, ADP-glucose type
Potri.004G014100	-1.26223	5.00E-05	FAR1	SS3	starch synthase 3
Potri.001G351800	-1.32736	5.00E-05	FAR1	SS4	starch synthase 4
Potri.018G124700	-0.60186	0.6123	HD-ZIP	SPS1F	sucrose phosphate synthase 1F
Potri.001G317600	-1.64113	5.00E-05	HD-ZIP	SPS3F	sucrose phosphate synthase 3F
Potri.017G057800	-5.49037	5.00E-05	HD-ZIP	SPS3F	sucrose phosphate synthase 3F
Potri.013G095500	-2.27249	5.00E-05	HD-ZIP	SPS4F	Sucrose-phosphate synthase family protein
Potri.017G139100	2.32303	0.0001	HB-other	SUS5	sucrose synthase 5
Potri.004G081300	2.38275	5.00E-05	HB-other	SUS6	sucrose synthase 6
Potri.012G037200	2.05904	0.0006	HB-other	SUS6	sucrose synthase 6
Potri.015G029100	2.62723	0.00225	HB-other	SUS6	sucrose synthase 6
Potri.016G066100	-1.13785	0.0001	EIL		Sucrose-6F-phosphate phosphohydrolase family protein
Potri.005G249200	-1.75952	5.00E-05	C2H2	VAR1	FtsH extracellular protease family
Potri.003G155100	-1.09616	0.00015	—	PTAC14	plastid transcriptionally active 14
Potri.015G005200	-1.69237	5.00E-05	—	PTAC15	plastid transcriptionally active 15
Potri.001G244800	-0.90985	0.00805	—	PTAC16	plastid transcriptionally active 16
Potri.015G069100	-0.67696	0.0157	—	PTAC2	plastid transcriptionally active 2
Potri.006G123600	-0.7636	0.01325	—	PTAC4	plastid transcriptionally active 4
Potri.001G049900	-0.85823	0.003	—	PTAC5	plastid transcriptionally active 5
Potri.015G110400	-3.32639	5.00E-05	—	FSD2	Fe superoxide dismutase 2
Potri.009G049400	-0.97494	0.00255	GRAS	CHLD	ALBINA 1
Potri.011G063400	-1.35088	5.00E-05	GRAS	CHLI1	P-loop containing nucleoside triphosphate hydrolases superfamily protein
Potri.001G420800	-0.61283	0.02705	—	CHL	chloroplastic lipocalin

Potri.012G106600	-0.632	0.0384	–	CHLM		magnesium-protoporphyrin IX methyltransferase
Potri.016G025000	-0.94176	0.01025	–	CRD1		dicarboxylate diiron protein, putative (Crd1)
Potri.006G027300	-0.85171	0.04055	–	CRD1		dicarboxylate diiron protein, putative (Crd1)
Potri.011G122400	3.90441	5.00E-05	C2H2	PORA		protochlorophyllide oxidoreductase A
Potri.009G092900	3.77703	0.00025	ERF	GH3.1		Auxin-responsive GH3 family protein
Potri.007G050300	3.30543	0.0072	ERF	GH3.1		Auxin-responsive GH3 family protein
Potri.014G136800	1.77199	0.021	ERF			Auxin-responsive GH3 family protein
Potri.005G236700	4.96506	5.00E-05	ARF	IAA24	Transcriptional factor B3 family protein / auxin-responsive factor AUX/IAA-related	
Potri.006G138500	1.5468	5.00E-05	ARF	IAA21,IAA23,IAA25	Transcriptional factor B3 family protein / auxin-responsive factor AUX/IAA-related	
Potri.008G161100	2.18315	5.00E-05	ARF	IAA4		AUX/IAA transcriptional regulator family protein
Potri.013G041300	3.49088	5.00E-05	ARF	IAA4		AUX/IAA transcriptional regulator family protein
Potri.005G053800	4.63233	0.00025	ARF	IAA4		AUX/IAA transcriptional regulator family protein
Potri.010G078400	0.701519	0.0406	ARF	IAA4		AUX/IAA transcriptional regulator family protein
Potri.001G177400	1.11775	0.00185	ARF	IAA17		AUX/IAA transcriptional regulator family protein
Potri.018G127800	1.57535	0.0115	ARF	IAA12		AUX/IAA transcriptional regulator family protein
Potri.015G134600	-1.09488	0.0014	Dof	GA20OX2		gibberellin 20 oxidase 2
Potri.001G378400	-2.12188	5.00E-05	STAT	GA2OX1		Arabidopsis thaliana gibberellin 2-oxidase 1
Potri.010G096800	-1.8797	0.0015	STAT	GA2OX7		gibberellin 2-oxidase 7