Table S1. Primers used for RT-qPCR analysis.

Gene	Primer Sequence (5'- 3')	Annealing temperature (°C)	GenBank Accession No/Reference
MdCAT	F: GACTTCTTCTCCCACCATCCAG R: TTGGTAGCGTGGCTGTGATTAG	59	XM008375181
MdSOD	F: GGGAGATGGCCCAACTACTG R: TTGCCAAGGTCATCAGGGTC	59	XM008347477
MdAPX	F: GCTTTCTTTGCTGACTATGCTGAA R: ATTGGCTTCATCCCTTGTAGTTCT	58	XM008346624
MdGPX	F: ATTCCCATGCAACCAGTTTGGAGC R: AGCAGCATTGTCGCCATTCACATC	60	CV658892
MdLEA6	F: AAAGCTAAAGCTCAAGAGAAGGTG R: GAGATGGGATTTATTCTCTGCACT	56	XM 008375340
MdDHN1	F: CACTTGGCGGTGCTACTACA R: TTCAACCCCTTCTTCCTCCT	60	Liang et al. 2012 [14] JQ649456
MdDHN6	F: ATGACGACCCCTACTCATCG R: CTTCGTACTCCCCTCCAGTG	60	Liang et al., 2012 [14] JQ649461
MdTIP1;1	F: TCGACCGTCCAATCATCTCAACCA R: ATCGAGATGAACTCGGCTAACGCA	60	Zhang et al. 2015 [39]
MdPIP1;1	F: AGCTGACGTCATGGTCGTTCTACA R: TGCACTTCGACTTGGACTTGACGA	60	Zhang et al. 2015 [39]
MdPIP2;1	F: CCTTCTACCACCAATACATTC R: TGATTATCTACAATTCCATAGCC	54	Liu et al., 2019 [46]
MdPIP2;3	F:CAAGAGGAGTGCTAGAGAC R:GCCAAGTGGACAATGAAC	54	Liu et al., 2019 [46]
MdMYB4	F: GTTTCTGGATCTCAAGATGGAAGT R: TAAACTCAAGCTGTTTCTCCACAG	60	DQ074460
MdMYB121	F: TCATCCCCCATCCTCACTACCA R: TCGTTTGCATCTTAGCACTTGC	59	Cao et al. 2013 [47]
MdWRKY42	F: CTTCCTCGTTTGCTGACACA R: CCGGGAAGCTGCTAATGTTC	60	Zhang et al. 2021 [48]
MdWRKY91	F: AACCTCCTCCCAATCGTCG R: CCCTTTTGTGTATTTGCCCA	60	Meng et al. 2016 [49]
MdDREB2	F: AACTTCGAATACGGTTTTGATTTC R: TAAGTCAGACAATCCCAGATTGAA	60	JQ669816
MdDREB4	F: GGGACCGTCTTCGTGGAAA R: TACCCGACCCGAATGTGCT	55	Zhao et al. 2012 [50] (JQ669821)
MdDREB76	F: TACCCCATCTCAAATTCTTCAAAT R: CCTCACTCCTCTGTAGAGCTTTGT	60	EB152493
MdNAC39	F: CAGTGGTGCTAGAGGGGTT R: CACTTCATCACTGCAAACCG	60	Li et al. 2020 [51]
MdNCED2	F: ACTCTAAATTGCTCTCTGCAAACC R: TGGACTTTTGGGTCTTATCTTCTC	60	KJ719311
MdPAL	F: TATCGACCCAATTCTGGGTTGCCT R: ATGCAGCATGTAAACCGTGACGTG	59	X68126
MdCHS	F: ATTGGTGCCGACCCAGTGC R: AATCCAGAAGAGTGAGTTCCAGTCC	60	Vergne et al. 2014 [52]
MdDFR	F: CGGTTGGATGTACTTCG	51	Vergne et al. 2014 [52]

	R: TGTGAGAAAGGCAGAGG		
MdANS	F: GCCTCAAGTTCCCACCATCG R: GAAGTAGTCCTCCCACTCAAGC	60	Vergne et al. 2014 [52]
MdAC11 (reference gene)	F: GCTGTTCTTTCCCTCTACGC R: GCATGGGGAAGAGCATATCC	58	Perini et al. 2014 [53]

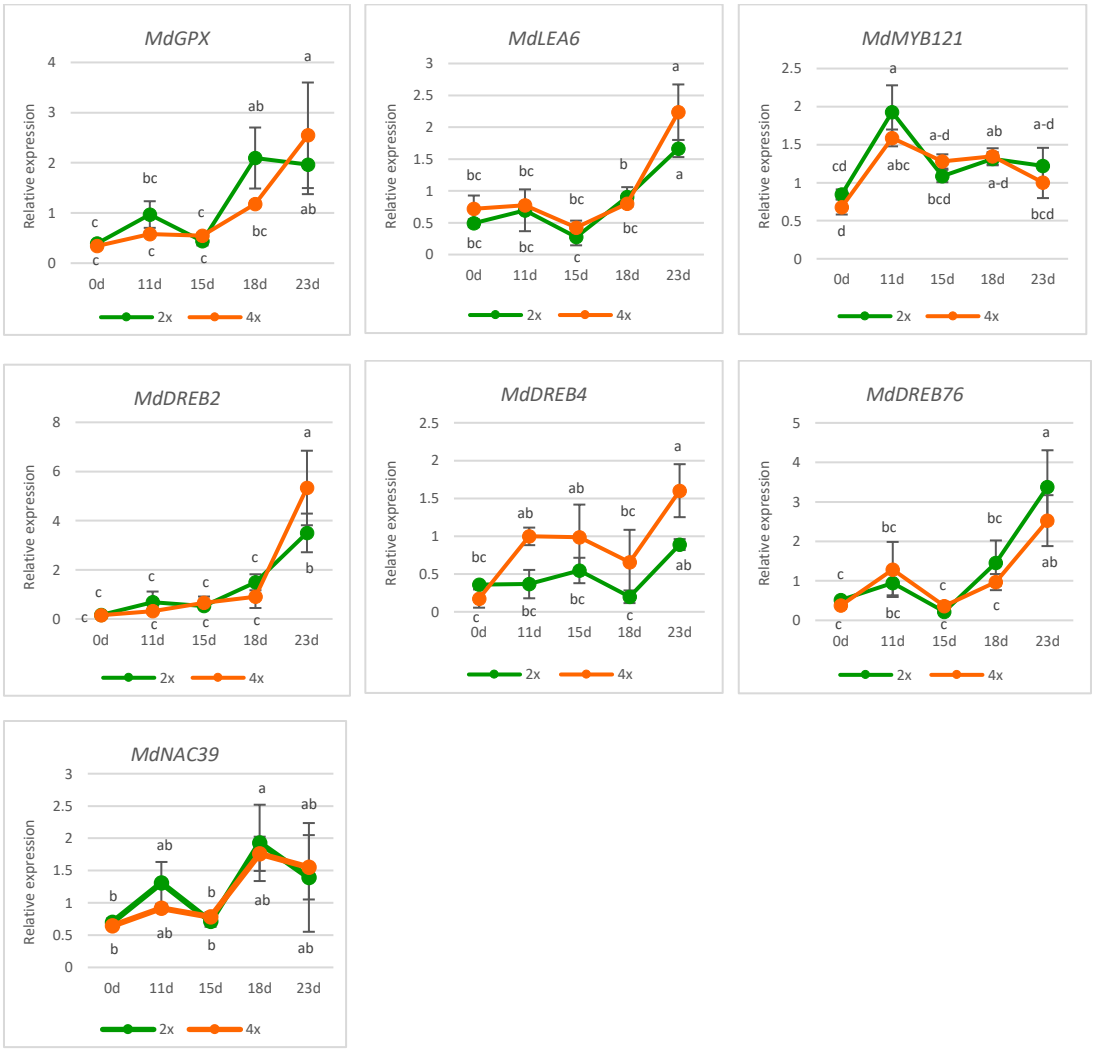


Figure S1. Relative expression of the genes encoding GPX, LEA6 protein, transcription factors MYB121, DREB and NAC in leaves of diploid (2x) and tetraploid (4x) apple 'Redchief' subjected to drought, measured before (0d) and 11, 15, 18 and 23 days after drought induction; data are expressed as mean ± SD (n = 3); bars marked with the same letter do not differ significantly at $p \leq 0.05$, Duncan's test.

Table S2. Growth parameters of diploid and tetraploid apple 'Redchief' subjected to drought and optimally irrigated, determined before stress, after 14 days of water deficit and at the end of growth (Experiment II).

Experimental combination	Measurement time point	Growth parameter		
		Trunk diameter (mm)	Length of main shoot (cm)	Total length of secondary shoots (cm)
'Redchief' 2x				
Optimally irrigated	Before stress	8.6 ± 0.6*	113.2 ± 7.0	89.5 ± 50.9
	After 14 days of drought	9.6 ± 0.5	119.0 ± 6.8	112.7 ± 59.3
	At the end of growth	11.0 ± 1.1	140.7 ± 13.3	145.3 ± 72.5
Subjected to drought	Before stress	9.6 ± 1.0	123.6 ± 12.9	121.6 ± 34.1
	After 14 days of drought	9.7 ± 1.1	124.0 ± 12.6	123.9 ± 34.4
	At the end of growth	10.2 ± 1.0	126.1 ± 11.1	136.4 ± 37.4
'Redchief' 4x-25				
Optimally irrigated	Before stress	9.3 ± 0.6	116.9 ± 5.7	104.1 ± 36.4
	After 14 days of drought	9.8 ± 0.5	125.9 ± 8.2	130.0 ± 32.7
	At the end of growth	11.3 ± 0.9	132.7 ± 9.2	143.7 ± 46.1
Subjected to drought	Before stress	9.7 ± 0.9	114.4 ± 12.1	96.3 ± 61.3
	After 14 days of drought	10.1 ± 1.3	116.8 ± 11.7	101.4 ± 61.9
	At the end of growth	10.7 ± 1.1	122.0 ± 13.7	116.8 ± 66.7

* Data are expressed as mean ± SD ("n" represents the individual plants and ranges from 6 to 8, depending on the combination).

Table S3. Characteristics of stomata traits of diploid (2x) and tetraploid clones (4x) of 'Redchief' apple trees before drought induction and after stress (Experiment II).

Trait	'Redchief' 2x		'Redchief' 4x-25	
	Before drought	After 14 days of drought	Before drought	After 14 days of drought
Stomata length (μm)	19.3 ± 2.2 bc*	17.9 ± 3.2 c	25.6 ± 3.1 a	20.4 ± 4.0 b
Stomata frequency (no. mm^{-2})	250 ± 17 b	293 ± 10 a	153 ± 19 d	194 ± 7 c

* Data are expressed as mean ± SD (n = 3); means for each trait marked with the same letter do not differ significantly at $p \leq 0.05$, Duncan's test.

Table S4. Anatomical structure of the leaves of diploid and tetraploid apple cv. 'Redchief' after 14 days of drought (Experiment II).

Thickness (μm)	'Redchief' 2x		'Redchief' 4x-25	
	Unstressed	Stressed	Unstressed	Stressed
Leaf lamina	175.5 ± 10.5 b*	173.3 ± 9.4 b	216.23 ± 17.1 a	172.7 ± 22.7 b
Spongy mesophyll	70.3 ± 6.0 ab	67.9 ± 6,3 ab	90.4 ± 16.4 a	62.6 ± 14.6 b
Palisade mesophyll	77.9 ± 10,3 a	83.9 ± 0.7 a	83.4 ± 12.7 a	65.9 ± 11.9 a

Adaxial epidermis	14.4 ± 0.5 a	12.6 ± 1.3 a	15.8 ± 1.5 a	14.9 ± 3.1 a
Abaxial epidermis	9.7 ± 0.4 b	9.8 ± 1.1 b	12.1 ± 0.2 a	10.2 ± 1.3 b

* Data are expressed as mean ± SD (n = 3); means for each trait marked with the same letter do not differ significantly at $p \leq 0.05$; Duncan's test.