

Table S1. Primer pairs used for qRT-PCR analysis of *KobHLHs*

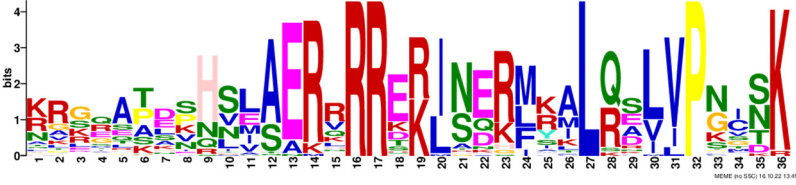
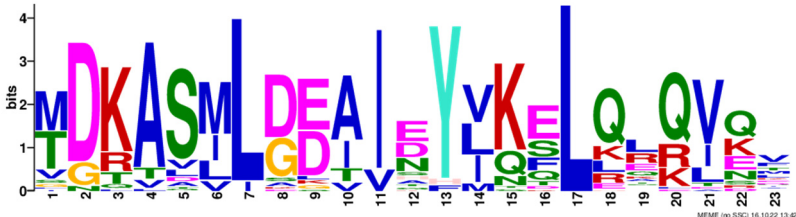
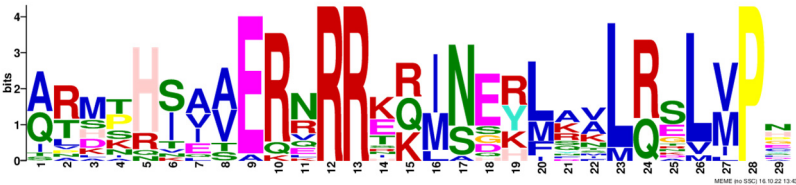

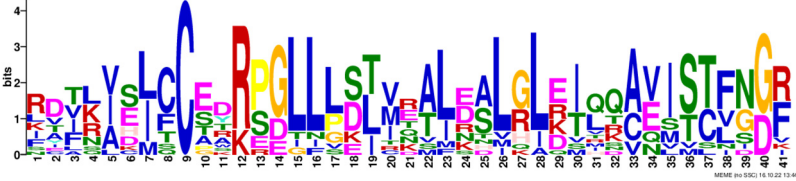
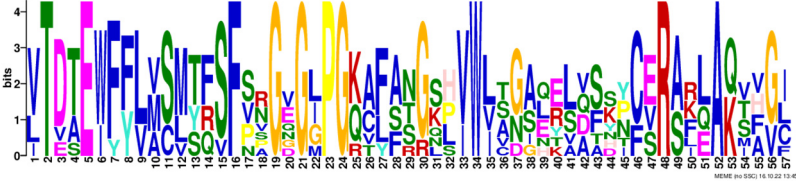

<i>KobHLHs</i>	Primer pairs	
	Forward primer (5'-3')	Reverse primer (5'-3')
<i>KobHLH52</i>	TTGATGACCATGTTCCGGGG	TCCTGGTAGAATTGCCGCTG
<i>KobHLH30</i>	GTTGGGCCGTATGAGTTCCA	CGCCTCTTCTCAGCTTCCTT
<i>KobHLH26</i>	GGAGCTTGGTGAAGTGGGAA	CCTGCTGCATGTTCTCTCCA
<i>KobHLH29</i>	TCCGTCACGTGCACAACACC	ATTGAGTCCCCAGAAGCAGC
<i>KobHLH17</i>	CCGCAAACTCTCTCTCCGTT	GAAGGGCGGATGAACAAACG
<i>KobHLH60</i>	TCAATACCAAGCACCCGTCC	TTGTGAGAAGTTGGCACCGA
<i>KobHLH31</i>	TCTGTTGAGATTGACGCCGG	GCTCTATCAGATGGCACCCC
<i>KobHLH45</i>	GGTCCGGTGGTTATGCAGAA	GATGCTGTTGGTCTTGCTGC
<i>KobHLH7</i>	AAACCAGAATCCCACGGTCC	TGGTTGCCTGAAACATGGGA
<i>KobHLH27</i>	AAAGCAGAATCCAGGCACGA	TCCAGCAGGGGAGCTATTCT
<i>KobHLH14</i>	CGTCAAATCTCGGTGACCCA	TAAGGTGGGCTTTGGTTGCA
18S rRNA	GGGGCTCGAAGACGATCAGA	TTAAGCCGCAGGCTCCACTC

Table S2. Primer pairs used for subcellular localization analysis of *KobHLHs* in the *N. benthamiana* leaves

<i>KobHLH</i>	Primer pairs	
	Forward primer (5'-3')	Reverse primer (5'-3')
<i>KobHLH52</i>	ATGGACACCTTCTTTTCCATGG	CGTTGCCGACTTGGCAAAT
<i>KobHLH26</i>	ATGGCGATCTCATCCATCAGG	GTTCAACATTCAATTCGCTCATG

Table S3. Annotation of *bHLH* genes in *K. obovata*
(Please see separate Excel file)

Table S4. Top 10 Motifs of *KobHLHs*

Motif	E-value	Sites	Width	Multilevel consensus sequence
1	3.2×10^{-756}	50	36	
2	1.7×10^{-508}	50	23	
3	4.3×10^{-179}	20	29	
4	8.9×10^{-172}	13	49	
5	1.9×10^{-134}	15	41	
6	9.6×10^{-131}	8	57	
7	5.8×10^{-92}	20	29	

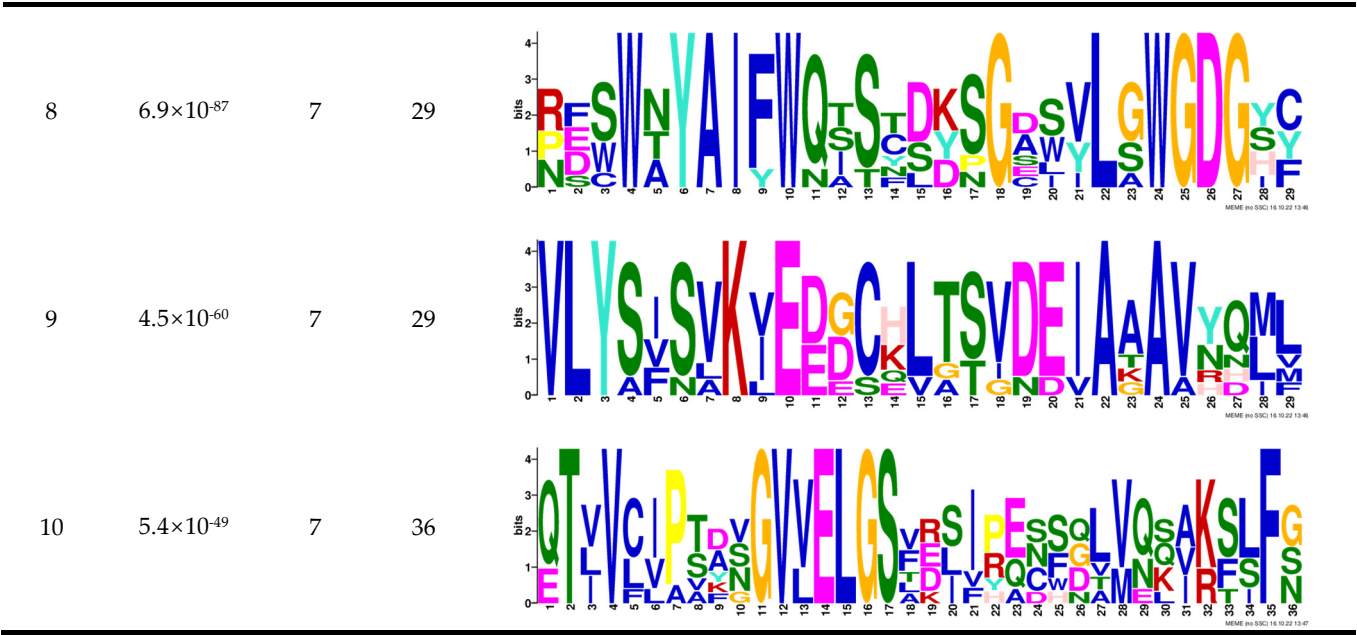


Table S5. The selection pressure and estimated divergence times for duplicate pairs of *KobHLHs*.

Duplication gene pair		Duplicati on	Ka	Ks	Ka/Ks	Divergence time (Million years ago)	Selection pressure
<i>KobHLH27</i>	<i>KobHLH73</i>	Segmental	0.5343	1.8835	0.2837	62.78	Purifying
<i>KobHLH73</i>	<i>KobHLH75</i>	Segmental	0.1316	0.4389	0.2997	14.63	Purifying
<i>KobHLH19</i>	<i>KobHLH37</i>	Segmental	-	-	-	-	-
<i>KobHLH20</i>	<i>KobHLH31</i>	Segmental	0.4732	2.3979	0.1973	79.93	Purifying
<i>KobHLH23</i>	<i>KobHLH32</i>	Segmental	0.2994	1.4437	0.2074	48.12	Purifying
<i>KobHLH32</i>	<i>KobHLH35</i>	Segmental	0.1128	0.3217	0.3507	10.72	Purifying
<i>KobHLH63</i>	<i>KobHLH68</i>	Segmental	0.0738	0.3885	0.1901	12.95	Purifying
<i>KobHLH33</i>	<i>KobHLH39</i>	Segmental	0.1123	0.3706	0.303	12.35	Purifying
<i>KobHLH7</i>	<i>KobHLH8</i>	Segmental	0.2987	2.3085	0.1294	76.95	Purifying
<i>KobHLH6</i>	<i>KobHLH26</i>	Segmental	0.1485	0.32	0.464	10.67	Purifying
<i>KobHLH1</i>	<i>KobHLH29</i>	Segmental	0.1637	0.2723	0.6014	9.08	Purifying
<i>KobHLH2</i>	<i>KobHLH28</i>	Segmental	0.1105	0.2788	0.3965	9.29	Purifying
<i>KobHLH4</i>	<i>KobHLH27</i>	Segmental	0.1161	0.268	0.4331	8.93	Purifying
<i>KobHLH3</i>	<i>KobHLH59</i>	Segmental	0.3689	1.7796	0.2073	59.32	Purifying
<i>KobHLH4</i>	<i>KobHLH73</i>	Segmental	0.4795	2.0907	0.2293	69.69	Purifying
<i>KobHLH9</i>	<i>KobHLH19</i>	Segmental	0.1257	0.5278	0.2381	17.59	Purifying
<i>KobHLH10</i>	<i>KobHLH20</i>	Segmental	0.1682	0.4136	0.4067	13.79	Purifying
<i>KobHLH12</i>	<i>KobHLH25</i>	Segmental	0.1082	0.5193	0.2084	17.31	Purifying
<i>KobHLH13</i>	<i>KobHLH24</i>	Segmental	0.1339	0.3191	0.4195	10.64	Purifying
<i>KobHLH11</i>	<i>KobHLH23</i>	Segmental	0.1092	0.3877	0.2816	12.92	Purifying
<i>KobHLH10</i>	<i>KobHLH31</i>	Segmental	0.4663	1.6259	0.2868	54.2	Purifying
<i>KobHLH11</i>	<i>KobHLH32</i>	Segmental	0.3522	1.9537	0.1803	65.12	Purifying
<i>KobHLH9</i>	<i>KobHLH37</i>	Segmental	-	-	-	-	-
<i>KobHLH11</i>	<i>KobHLH35</i>	Segmental	0.3476	1.5923	0.2183	53.08	Purifying
<i>KobHLH14</i>	<i>KobHLH47</i>	Segmental	0.0709	0.4647	0.1526	15.49	Purifying
<i>KobHLH15</i>	<i>KobHLH48</i>	Segmental	0.1369	0.29	0.472	9.67	Purifying
<i>KobHLH18</i>	<i>KobHLH51</i>	Segmental	0.1183	0.5081	0.2328	16.94	Purifying
<i>KobHLH16</i>	<i>KobHLH63</i>	Segmental	0.1564	1.5136	0.1033	50.45	Purifying
<i>KobHLH16</i>	<i>KobHLH68</i>	Segmental	-	-	-	-	-
<i>KobHLH22</i>	<i>KobHLH33</i>	Segmental	-	-	-	-	-
<i>KobHLH22</i>	<i>KobHLH39</i>	Segmental	0.4165	3.0451	0.1368	101.5	Purifying
<i>KobHLH46</i>	<i>KobHLH61</i>	Segmental	0.1413	0.4288	0.3295	14.29	Purifying
<i>KobHLH43</i>	<i>KobHLH57</i>	Segmental	0.1283	0.5205	0.2465	17.35	Purifying
<i>KobHLH44</i>	<i>KobHLH58</i>	Segmental	0.0996	0.4461	0.2233	14.87	Purifying
<i>KobHLH55</i>	<i>KobHLH71</i>	Segmental	0.0935	0.5508	0.1697	18.36	Purifying
<i>KobHLH64</i>	<i>KobHLH69</i>	Segmental	0.1685	0.4147	0.4062	13.82	Purifying
<i>KobHLH66</i>	<i>KobHLH67</i>	Segmental	0.0886	0.4142	0.2139	13.81	Purifying

Table S6. *KobHLHs* syntenic relationship with Arabidopsis, Rice, and Poplar

<i>Kandelia obovata</i>	Arabidopsis	Rice	Poplar
<i>KobHLH1</i>	<i>AT1G02340.1</i>	<i>LOC_Os05g04740.1</i>	<i>Po.05G000800</i>
<i>KobHLH1</i>	<i>AT1G09530.1</i>		<i>Po.13G002800</i>
<i>KobHLH2</i>			<i>Po.13G026300</i>
<i>KobHLH3</i>		<i>LOC_Os03g58330.1</i>	<i>Po.02G047700</i>
<i>KobHLH3</i>			<i>Po.05G058000</i>
<i>KobHLH3</i>			<i>Po.05G230500</i>
<i>KobHLH3</i>			<i>Po.13G043000</i>
<i>KobHLH4</i>	<i>AT2G42280.1</i>	<i>LOC_Os09g31300.1</i>	<i>Po.06G060000</i>
<i>KobHLH4</i>			<i>Po.16G054500</i>
<i>KobHLH5</i>	<i>AT5G01310.1</i>		<i>Po.06G111600</i>
<i>KobHLH5</i>			<i>Po.16G126400</i>
<i>KobHLH6</i>	<i>AT2G22750.2</i>		<i>Po.01G303700</i>
<i>KobHLH6</i>			<i>Po.07G011500</i>
<i>KobHLH6</i>			<i>Po.09G083700</i>
<i>KobHLH7</i>			<i>Po.04G171900</i>
<i>KobHLH7</i>			<i>Po.09G134600</i>
<i>KobHLH8</i>	<i>AT4G36060.1</i>		<i>Po.05G126500</i>
<i>KobHLH8</i>			<i>Po.09G134600</i>
<i>KobHLH9</i>	<i>AT3G50330.1</i>	<i>LOC_Os03g55550.1</i>	<i>Po.02G137800</i>
<i>KobHLH9</i>	<i>AT5G67060.1</i>		<i>Po.05G152400</i>
<i>KobHLH9</i>			<i>Po.07G053000</i>
<i>KobHLH9</i>			<i>Po.14G027200</i>
<i>KobHLH10</i>	<i>AT4G36930.1</i>		<i>Po.02G137100</i>
<i>KobHLH10</i>	<i>AT5G67110.1</i>		<i>Po.14G025900</i>
<i>KobHLH11</i>	<i>AT5G65640.1</i>		<i>Po.02G118700</i>
<i>KobHLH11</i>	<i>AT5G10570.1</i>		
<i>KobHLH12</i>	<i>AT1G05805.1</i>	<i>LOC_Os04g41229.1</i>	<i>Po.02G255100</i>
<i>KobHLH12</i>	<i>AT2G43140.2</i>		
<i>KobHLH13</i>			<i>Po.02G260000</i>
<i>KobHLH13</i>			<i>Po.14G157400</i>
<i>KobHLH14</i>		<i>LOC_Os01g70310.1</i>	<i>Po.12G113200</i>
<i>KobHLH14</i>			<i>Po.15G111800</i>
<i>KobHLH15</i>	<i>AT5G50915.1</i>	<i>LOC_Os08g42470.1</i>	<i>Po.01G068800</i>
<i>KobHLH15</i>		<i>LOC_Os09g33580.2</i>	<i>Po.03G176500</i>
<i>KobHLH15</i>			<i>Po.12G111900</i>
<i>KobHLH15</i>			<i>Po.15G110700</i>
<i>KobHLH16</i>	<i>AT3G47710.1</i>		<i>Po.12G072600</i>
<i>KobHLH16</i>	<i>AT5G39860.1</i>		<i>Po.15G066100</i>
<i>KobHLH17</i>	<i>AT5G61270.1</i>		
<i>KobHLH16</i>			<i>Po.17G084900</i>
<i>KobHLH18</i>			<i>Po.06G079900</i>
<i>KobHLH18</i>			<i>Po.18G146400</i>

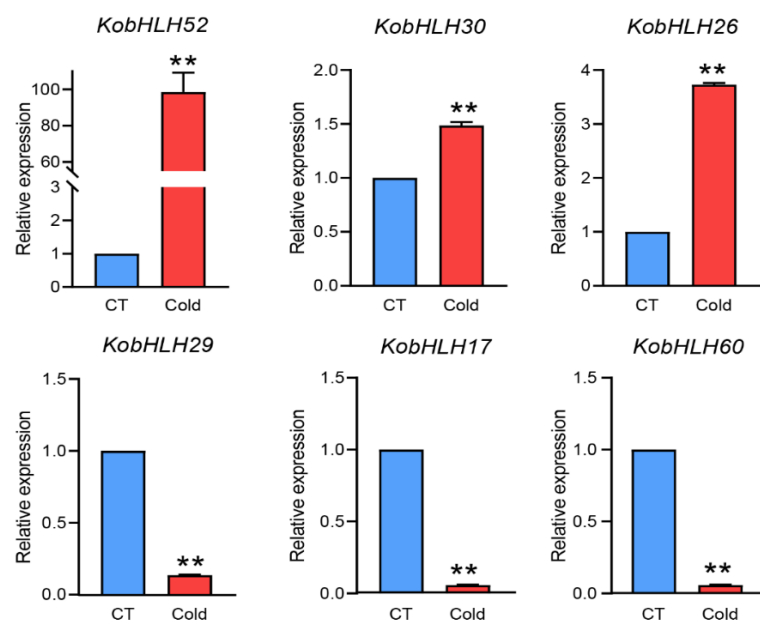
KobHLH19	AT3G50330.1		Po.02G137800
KobHLH19	AT5G67060.1		Po.05G152400
KobHLH19			Po.07G053000
KobHLH19			Po.14G027200
KobHLH20	AT4G36930.1		Po.02G137100
KobHLH20	AT5G67110.1		Po.14G025900
KobHLH21	AT1G66470.1		Po.04G096200
KobHLH21	AT5G37800.1		Po.17G136100
KobHLH22	AT5G65320.1	LOC_Os03g08930.1	Po.02G111600
KobHLH22	AT5G65640.1	LOC_Os09g29360.1	Po.05G077100
KobHLH22			Po.07G104100
KobHLH23	AT5G10570.1		Po.02G118700
KobHLH24	AT3G23690.1		Po.02G260000
KobHLH24			Po.14G157400
KobHLH25	AT2G43140.2	LOC_Os04g41229.1	Po.02G255100
KobHLH25			Po.14G159100
KobHLH26	AT2G22750.2		Po.01G303700
KobHLH26			Po.09G083700
KobHLH27	AT2G42280.1	LOC_Os09g31300.1	Po.06G060000
KobHLH27			Po.09G066400
KobHLH27			Po.16G054500
KobHLH28			Po.05G043100
KobHLH28			Po.13G026300
KobHLH29	AT1G09530.1		Po.05G000800
KobHLH29	AT1G02340.1		Po.13G002800
KobHLH30	AT2G41130.1		Po.06G037200
KobHLH30	AT3G56770.1		Po.16G038200
KobHLH30	AT3G56770.1		
KobHLH31	AT5G67110.1		Po.02G137100
KobHLH31			Po.05G153000
KobHLH31			Po.14G025900
KobHLH32	AT5G65640.1		Po.02G118700
KobHLH33	AT1G22490.1	LOC_Os03g08930.1	Po.02G111600
KobHLH33	AT5G65320.1	LOC_Os09g29360.1	Po.05G077100
KobHLH34			Po.02G157000
KobHLH35	AT5G65640.1		Po.02G118700
KobHLH36	AT1G10120.1	LOC_Os03g12940.1	Po.02G125300
		LOC_Os03g51910.1	
KobHLH37	AT3G50330.1	LOC_Os08g36740.1	Po.02G137800
KobHLH37	AT5G67060.1	LOC_Os09g28210.1	Po.05G152400
KobHLH37			Po.07G053000
KobHLH37			Po.14G027200
KobHLH38		LOC_Os08g37290.1	Po.02G115300
KobHLH39	AT1G22490.1	LOC_Os09g28900.1	Po.02G111600

KobHLH39		LOC_Os02g52190.1	Po.07G104100
		LOC_Os03g08930.1	
		LOC_Os09g29360.1	
KobHLH40			Po.02G059600
KobHLH40			Po.05G220300
KobHLH41	AT2G46810.1		Po.02G044400
KobHLH41	AT3G61950.1		Po.05G233500
KobHLH42	AT4G01460.1		Po.02G199200
KobHLH42	AT4G00870.1		Po.14G109600
KobHLH42			
KobHLH43			Po.01G086900
KobHLH43			Po.02G196200
KobHLH43	AT1G01260.1		Po.03G159800
KobHLH43	AT2G46510.1		Po.14G107000
KobHLH44			Po.02G196200
KobHLH44	AT2G20180.2		Po.02G191900
KobHLH44	AT4G28790.1		Po.14G101600
KobHLH45	AT3G07340.1		Po.02G279700
KobHLH45	AT5G48560.1		
KobHLH46		LOC_Os08g41320.1	Po.02G275500
KobHLH46		LOC_Os09g32510.4	
KobHLH47	AT5G50915.1	LOC_Os11g32100.1	Po.12G113200
KobHLH47			Po.15G111800
KobHLH48		LOC_Os08g42470.1	Po.01G068800
KobHLH48			Po.03G176500
KobHLH48	AT5G62610.1		Po.12G111900
KobHLH48			Po.15G110700
KobHLH49			Po.10G032900
KobHLH49	AT2G24260.1		Po.12G076300
KobHLH49	AT4G30980.1		Po.15G071000
KobHLH50	AT5G58010.1	LOC_Os02g55250.1	Po.06G195600
KobHLH50	AT4G29930.3		Po.18G114100
KobHLH50			
KobHLH51	AT5G56960.1		Po.06G079900
KobHLH51			Po.18G146400
KobHLH52		LOC_Os01g09900.1	Po.06G162000
KobHLH53	AT1G32640.1	LOC_Os06g09370.1	Po.06G149100
KobHLH54	AT4G17880.1		Po.01G202700
KobHLH55	AT5G46760.1		Po.01G153100
KobHLH55	AT5G46830.1		Po.03G098000
KobHLH55	AT2G46970.1		
KobHLH55	AT4G00870.1		
KobHLH56			Po.14G115200
KobHLH57			Po.01G086900

KobHLH57	AT1G01260.1		Po.02G196200
KobHLH57	AT2G46510.1		Po.14G107000
KobHLH58	AT1G03040.1		Po.02G191900
KobHLH58	AT4G02590.1		Po.14G101600
KobHLH59		LOC_Os03g58330.1	Po.02G047700
KobHLH59		LOC_Os07g08440.1	Po.02G052300
KobHLH59			Po.05G230500
KobHLH59			Po.05G058000
KobHLH59			Po.13G043000
KobHLH60	AT3G07340.1		Po.02G060800
KobHLH60	AT5G48560.1		Po.05G218700
KobHLH61	AT1G10610.1	LOC_Os08g41320.1	Po.02G275500
KobHLH61	AT1G12860.1		
KobHLH62	AT1G26945.1		Po.08G219500
KobHLH62	AT3G28857.1		
KobHLH63	AT3G47710.1	LOC_Os02g51320.1	Po.12G072600
KobHLH63	AT5G15160.1		Po.17G084900
KobHLH63	AT1G69010.1		
KobHLH63			
KobHLH64			Po.08G132600
KobHLH64	AT1G68920.1		Po.10G139000
KobHLH64	AT1G26260.1		Po.17G104300
KobHLH65	AT1G68810.1		Po.08G134000
KobHLH65	AT3G25710.1		Po.10G137500
KobHLH66	AT1G68810.1		Po.08G136900
KobHLH66	AT3G25710.1		Po.10G130000
KobHLH67	AT1G26945.1		Po.08G136900
KobHLH67	AT3G28857.1		Po.10G130000
KobHLH68	AT5G15160.1		Po.12G072600
KobHLH68	AT5G39860.1		Po.17G084900
KobHLH68	AT1G69010.1		
KobHLH68	AT5G08130.5		
KobHLH69	AT1G63650.1		Po.10G139000
KobHLH69	AT5G41315.1		
KobHLH70			Po.01G109500
KobHLH70			Po.02G176100
KobHLH70	AT1G32640.1		Po.03G137000
KobHLH70	AT4G17880.1		Po.14G085600
KobHLH71	AT5G46830.1		Po.01G153100
KobHLH71	AT5G46760.1		Po.03G098000
KobHLH71	AT5G46690.1		
KobHLH71			
KobHLH72	AT1G51140.1		Po.01G151900
KobHLH72			Po.03G099000

<i>KobHLH73</i>	<i>LOC_Os08g39630.1</i>	<i>Po.01G018700</i>
<i>KobHLH73</i>	<i>LOC_Os09g31300.1</i>	<i>Po.01G287100</i>
<i>KobHLH73</i>		<i>Po.03G225600</i>
<i>KobHLH73</i>		<i>Po.06G060000</i>
<i>KobHLH73</i>		<i>Po.09G066400</i>
<i>KobHLH73</i>		<i>Po.16G054500</i>
<i>KobHLH74</i>	<i>AT1G51140.1</i>	<i>Po.04G060100</i>
<i>KobHLH74</i>		<i>Po.11G061200</i>
<i>KobHLH75</i>	<i>LOC_Os08g39630.1</i>	<i>Po.01G018700</i>
<i>KobHLH75</i>	<i>LOC_Os09g31300.1</i>	<i>Po.03G225600</i>

Figure S1. qRT-PCR analysis of 6 low temperature and 5 drought response *KobHLHs*. The “*” and “**” represent statistically significant differences ($p < 0.05$ and $p < 0.01$) analyzed using Student's t-test.



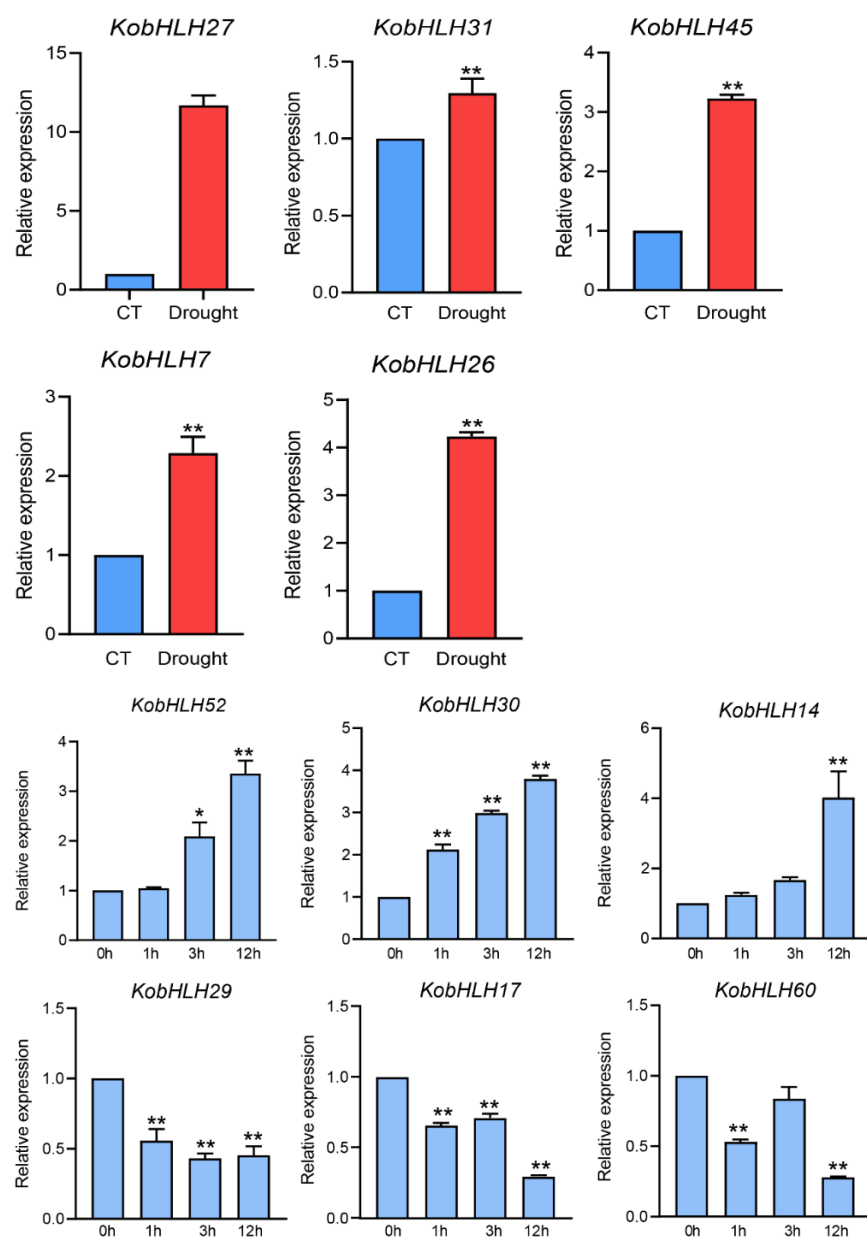


Figure S2. (A,B) gas exchange and minimum fluorescence parameters under drought and cold stress. The “***” represents statistically significant differences ($p < 0.01$) analyzed using Student's t-test.

