

**Table S6.** Sequence diversity and selection statistics of *WRKY* genes in wild and cultivated barley populations

Genes	Gene IDs	Type	Length of fl-ORF	No. of valid sites	No. of seq.	Polymorphisms			No. of haplotypes	<i>H</i>	$\pi$	Tajima's <i>D</i>
						<i>LoF</i>	<i>N<sub>s</sub></i>	<i>S</i>				
<i>HvWRKY1/38</i>	HORVU.MOREX.r2.6HG0471210.1	<i>Hs</i>	1062	1046	75	0	0	7	8	0.69100	0.00090	-0.95917
		<i>Hv</i>			125	0	2	2	5	0.31900	0.00032	-0.93499
<i>HvWRKY2</i>	HORVU.MOREX.r2.7HG0616250.1	<i>Hs</i>	960	272	67	0	2	4	6	0.70200	0.00363	-0.44061
		<i>Hv</i>			117	0	3	3	6	0.68800	0.00377	0.80694
<i>HvWRKY3</i>	HORVU.MOREX.r2.5HG0400750.1	<i>Hs</i>	996	567	90	0	6	14	12	0.81300	0.00311	-1.48667
		<i>Hv</i>			134	0	6	9	7	0.57500	0.00260	-1.18422
<i>HvWRKY4</i>	HORVU.MOREX.r2.2HG0091860.1	<i>Hs</i>	1047	102	61	0	0	2	3	0.32700	0.00327	-1.34627
		<i>Hv</i>			130	0	3	1	4	0.17400	0.00220	-1.59618
<i>HvWRKY5</i>	HORVU.MOREX.r2.3HG0222170.1	<i>Hs</i>	714	649	84	0	5	1	7	0.46100	0.00081	-1.04538
		<i>Hv</i>			135	0	2	1	4	0.64400	0.00135	1.16844
<i>HvWRKY6</i>	HORVU.MOREX.r2.7HG0577260.1	<i>Hs</i>	1566	1373	90	0	5	4	8	0.26600	0.00022	-1.74566
		<i>Hv</i>			135	0	2	2	5	0.53200	0.00042	-0.23802
<i>HvWRKY8</i>	HORVU.MOREX.r2.5HG0360410.1	<i>Hs</i>	1068	832	88	0	2	7	7	0.35400	0.00061	-1.69853
		<i>Hv</i>			136	0	1	0	2	0.01500	0.00002	-1.21447
<i>HvWRKY9</i>	HORVU.MOREX.r2.5HG0423130.1	<i>Hs</i>	1188	1130	71	0	6	25	20	0.89200	0.00459	-0.51639
		<i>Hv</i>			119	0	3	12	6	0.66700	0.00444	2.94685*
<i>HvWRKY10</i>	HORVU.MOREX.r2.2HG0130750.1	<i>Hs</i>	957	106	89	0	1	2	4	0.39600	0.00391	-0.03032
		<i>Hv</i>			126	0	0	3	4	0.51100	0.00533	-0.537679
<i>HvWRKY11</i>	HORVU.MOREX.r2.5HG0432220.1	<i>Hs</i>	1359	766	67	0	11	10	17	0.81100	0.00304	-1.08243
		<i>Hv</i>			117	0	5	1	6	0.51600	0.00089	-1.00012

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<i>HvWRKY12</i>	HORVU.MOREX.r2.2HG0079820.1	<i>Hs</i>	591	537	54	0	6	19	26	0.96400	0.00573	-1.23073
		<i>Hv</i>			101	0	7	12	21	0.92800	0.00493	-0.84539
<i>HvWRKY13</i>	HORVU.MOREX.r2.1HG0067480.1	<i>Hs</i>	420	292	83	0	0	10	8	0.62200	0.00674	0.14762
		<i>Hv</i>			132	0	0	8	5	0.74100	0.00921	2.39787
<i>HvWRKY15</i>	HORVU.MOREX.r2.5HG0425110.1	<i>Hs</i>	930	554	89	0	7	8	14	0.77800	0.00234	-1.54089
		<i>Hv</i>			135	0	3	5	6	0.54000	0.00213	-0.64344
<i>HvWRKY17</i>	HORVU.MOREX.r2.1HG0023190.1	<i>Hs</i>	600	521	88	0	3	2	7	0.25300	0.00051	-1.58417
		<i>Hv</i>			132	0	1	1	3	0.46600	0.00095	0.67992
<i>HvWRKY18</i>	HORVU.MOREX.r2.3HG0236250.1	<i>Hs</i>	633	307	83	0	5	6	8	0.30400	0.00152	-0.63467
		<i>Hv</i>			136	0	3	2	5	0.25200	0.00144	-0.53028
<i>HvWRKY19</i>	HORVU.MOREX.r2.1HG0066230.1	<i>Hs</i>	657	191	89	0	1	9	11	0.63000	0.00421	-0.56455
		<i>Hv</i>			136	0	1	1	3	0.31900	0.00249	0.16758
<i>HvWRKY20</i>	HORVU.MOREX.r2.1HG0066270.1	<i>Hs</i>	651	578	80	0	6	10	13	0.61500	0.00311	-1.07527
		<i>Hv</i>			132	0	4	2	3	0.19600	0.00123	-0.90743
<i>HvWRKY22</i>	HORVU.MOREX.r2.5HG0392720.1	<i>Hs</i>	999	729	69	0	12	7	14	0.83300	0.00245	-1.62753
		<i>Hv</i>			112	0	2	3	5	0.68300	0.00217	0.79454
<i>HvWRKY23</i>	HORVU.MOREX.r2.7HG0616260.1	<i>Hs</i>	1179	235	86	0	3	7	11	0.56500	0.00415	-1.49465
		<i>Hv</i>			131	0	1	6	5	0.56300	0.00530	-0.43439
<i>HvWRKY26</i>	HORVU.MOREX.r2.1HG0074460.1	<i>Hs</i>	765	445	46	0	2	3	6	0.52100	0.00133	-0.72485
		<i>Hv</i>			101	0	0	0	1	0	0	-1.17355
<i>HvWRKY28</i>	HORVU.MOREX.r2.5HG0392730.1	<i>Hs</i>	1041	869	44	0	6	4	9	0.52700	0.00095	-1.78499
		<i>Hv</i>			89	0	3	3	6	0.65700	0.00101	-0.20339

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						<i>LoF</i>	<i>Ns</i>	<i>S</i>				
<i>Hv</i> WRKY31	HORVU.MOREX.r2.1HG0057170.1	<i>Hs</i>	930	877	73	0	19	16	18	0.89000	0.00600	-0.52370
		<i>Hv</i>			136	0	3	3	6	0.12800	0.00042	-1.35959
<i>Hv</i> WRKY32	HORVU.MOREX.r2.2HG0166600.1	<i>Hs</i>	879	150	90	0	1	4	9	0.74600	0.00708	0.48328
		<i>Hv</i>			137	0	1	2	4	0.64000	0.00670	1.66345
<i>Hv</i> WRKY33	HORVU.MOREX.r2.4HG0316370.1	<i>Hs</i>	621	49	90	0	1	2	4	0.35900	0.00751	-0.56955
		<i>Hv</i>			137	0	1	0	2	0.01500	0.00030	-0.91966
<i>Hv</i> WRKY34	HORVU.MOREX.r2.4HG0294290.1	<i>Hs</i>	672	570	89	0	6	7	12	0.65000	0.00232	-1.08278
		<i>Hv</i>			137	0	2	1	2	0.07100	0.00037	-0.94982
<i>Hv</i> WRKY35/41	HORVU.MOREX.r2.2HG0106180.1	<i>Hs</i>	1278	874	90	0	4	9	11	0.79200	0.00321	0.53148
		<i>Hv</i>			136	0	3	3	7	0.42700	0.00065	-0.84340
<i>Hv</i> WRKY37	HORVU.MOREX.r2.3HG0197030.1	<i>Hs</i>	1485	201	90	0	4	3	8	0.26700	0.00141	-0.90985
		<i>Hv</i>			137	0	0	0	1	0	0	-0.16439
<i>Hv</i> WRKY39	HORVU.MOREX.r2.3HG0239890.1	<i>Hs</i>	846	328	55	0	0	2	3	0.07200	0.00022	-0.65114
		<i>Hv</i>			101	0	0	1	2	0.02000	0.00006	-0.90236
<i>Hv</i> WRKY40	HORVU.MOREX.r2.5HG0386470.1	<i>Hs</i>	1005	233	90	0	3	1	5	0.56600	0.00269	-0.18658
		<i>Hv</i>			136	0	2	0	3	0.02900	0.00013	-1.21447
<i>Hv</i> WRKY42	HORVU.MOREX.r2.5HG0405940.1	<i>Hs</i>	2031	1918	82	0	11	24	28	0.93400	0.00171	-1.64952
		<i>Hv</i>			128	0	6	10	13	0.71500	0.00059	-1.61485
<i>Hv</i> WRKY43	HORVU.MOREX.r2.1HG0057680.1	<i>Hs</i>	1539	302	85	0	5	6	12	0.76900	0.00378	-1.19480
		<i>Hv</i>			130	0	1	4	6	0.34000	0.00119	-0.50474
<i>Hv</i> WRKY45	HORVU.MOREX.r2.3HG0237940.1	<i>Hs</i>	894	237	62	0	3	5	8	0.80900	0.00901	0.63440
		<i>Hv</i>			115	0	2	4	5	0.46200	0.00448	-0.25603

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						<i>LoF</i>	<i>Ns</i>	<i>S</i>				
<i>Hv</i> WRKY46	HORVU.MOREX.r2.2HG0107970.1	<i>Hs</i>	1848	1463	90	0	3	7	10	0.60200	0.00055	-1.30393
		<i>Hv</i>			137	0	2	5	7	0.32400	0.00035	-1.16404
<i>Hv</i> WRKY47	HORVU.MOREX.r2.3HG0209060.1	<i>Hs</i>	1710	1547	58	0	3	5	9	0.55200	0.00042	-1.82310
		<i>Hv</i>			104	0	3	5	9	0.55200	0.00049	-0.92263
<i>Hv</i> WRKY50	HORVU.MOREX.r2.3HG0254080.1	<i>Hs</i>	1677	627	70	0	2	15	19	0.84100	0.00260	-1.22615
		<i>Hv</i>			129	0	1	4	5	0.43200	0.00084	0.37584
<i>Hv</i> WRKY51	HORVU.MOREX.r2.3HG0230420.1	<i>Hs</i>	1095	554	90	0	0	1	2	0.02200	0.00004	0.63797
		<i>Hv</i>			137	0	0	0	1	0	0	1.53987
<i>Hv</i> WRKY52	HORVU.MOREX.r2.5HG0400740.1	<i>Hs</i>	996	595	82	0	10	10	17	0.86000	0.00404	-0.81277
		<i>Hv</i>			132	0	6	7	11	0.76100	0.00418	-0.03733
<i>Hv</i> WRKY55/87	HORVU.MOREX.r2.1HG0074420.1	<i>Hs</i>	1044	337	74	0	9	6	14	0.78700	0.00576	-1.64938
		<i>Hv</i>			120	0	2	0	3	0.03300	0.00010	-1.30200
<i>Hv</i> WRKY56	HORVU.MOREX.r2.1HG0076100.1	<i>Hs</i>	930	187	90	0	4	9	13	0.64600	0.00903	-0.61533
		<i>Hv</i>			137	0	2	7	7	0.49100	0.00779	0.29297
<i>Hv</i> WRKY57	HORVU.MOREX.r2.4HG0313700.1	<i>Hs</i>	1119	844	90	0	7	3	9	0.64800	0.00113	-1.14242
		<i>Hv</i>			137	0	2	1	3	0.02900	0.00004	-1.34929
<i>Hv</i> WRKY58	HORVU.MOREX.r2.4HG0284540.1	<i>Hs</i>	1023	881	90	0	8	21	25	0.92700	0.00460	-0.60447
		<i>Hv</i>			137	0	6	10	12	0.83600	0.00539	1.76245
<i>Hv</i> WRKY59	HORVU.MOREX.r2.2HG0144420.1	<i>Hs</i>	2211	843	61	0	6	14	15	0.80800	0.00535	-0.21297
		<i>Hv</i>			103	0	2	8	7	0.34400	0.00113	-1.54822
<i>Hv</i> WRKY60	HORVU.MOREX.r2.7HG0539640.1	<i>Hs</i>	1830	987	63	0	13	16	21	0.91000	0.00515	-0.08586
		<i>Hv</i>			105	0	9	11	12	0.82000	0.00361	0.41921

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						<i>LoF</i>	<i>Ns</i>	<i>S</i>				
<i>HvWRKY61</i>	HORVU.MOREX.r2.5HG0371550.1	<i>Hs</i>	1479	736	90	0	0	4	5	0.14900	0.00024	-1.35226
		<i>Hv</i>			136	0	0	0	1	0	0	NA
<i>HvWRKY64</i>	HORVU.MOREX.r2.3HG0226640.1	<i>Hs</i>	957	807	90	0	0	1	2	0.06500	0.00008	-0.64457
		<i>Hv</i>			137	0	2	1	4	0.50100	0.00069	0.13746
<i>HvWRKY65</i>	HORVU.MOREX.r2.5HG0425470.1	<i>Hs</i>	1260	355	85	0	3	8	11	0.70200	0.00322	-0.52030
		<i>Hv</i>			128	0	0	3	4	0.57400	0.00182	0.58766
<i>HvWRKY66</i>	HORVU.MOREX.r2.6HG0513200.1	<i>Hs</i>	1692	533	77	0	7	8	12	0.76500	0.00367	-0.42524
		<i>Hv</i>			132	0	2	3	4	0.43700	0.00175	0.49741
<i>HvWRKY67</i>	HORVU.MOREX.r2.5HG0400720.1	<i>Hs</i>	549	524	82	0	7	10	14	0.82600	0.00567	-0.35721
		<i>Hv</i>			126	0	2	6	6	0.66500	0.00378	1.14241
<i>HvWRKY68</i>	HORVU.MOREX.r2.2HG0153650.1	<i>Hs</i>	693	588	75	0	4	5	11	0.79000	0.00222	-0.88398
		<i>Hv</i>			127	0	0	2	3	0.47100	0.00083	-0.19483
<i>HvWRKY69</i>	HORVU.MOREX.r2.1HG0073000.1	<i>Hs</i>	1230	223	88	0	1	9	10	0.53400	0.00313	0.19644
		<i>Hv</i>			135	0	0	1	2	0.12500	0.00056	0.42403
<i>HvWRKY70</i>	HORVU.MOREX.r2.3HG0247840.1	<i>Hs</i>	825	149	78	0	2	3	6	0.30200	0.00298	-1.67988
		<i>Hv</i>			128	0	2	0	3	0.09100	0.00103	-0.66546
<i>HvWRKY71</i>	HORVU.MOREX.r2.7HG0584730.1	<i>Hs</i>	1026	709	87	0	10	5	14	0.58200	0.00152	-1.75770
		<i>Hv</i>			129	0	7	1	7	0.64600	0.00140	0.21203
<i>HvWRKY73</i>	HORVU.MOREX.r2.5HG0446310.1	<i>Hs</i>	1065	699	87	0	13	10	11	0.62200	0.00428	-0.92155
		<i>Hv</i>			134	0	8	6	7	0.15700	0.00071	-2.15932*
<i>HvWRKY74</i>	HORVU.MOREX.r2.1HG0042200.1	<i>Hs</i>	1023	924	74	0	6	9	23	0.92700	0.00253	-0.51567
		<i>Hv</i>			118	0	3	4	7	0.59200	0.00219	0.84291

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<i>Hv</i> WRKY75	HORVU.MOREX.r2.6HG0497280.1	<i>Hs</i>	684	492	90	0	6	6	11	0.69500	0.00241	-1.19886
		<i>Hv</i>			135	0	6	3	9	0.59300	0.00171	-1.08275
<i>Hv</i> WRKY76	HORVU.MOREX.r2.3HG0273730.1	<i>Hs</i>	1155	341	66	0	4	2	8	0.72200	0.00316	-0.72597
		<i>Hv</i>			112	0	2	2	3	0.63600	0.00296	0.45090
<i>Hv</i> WRKY79	HORVU.MOREX.r2.2HG0129050.1	<i>Hs</i>	858	505	82	0	9	14	17	0.87100	0.00704	-0.32834
		<i>Hv</i>			130	0	6	4	7	0.35000	0.00261	-0.48211
<i>Hv</i> WRKY80	HORVU.MOREX.r2.5HG0384210.1	<i>Hs</i>	1014	665	88	0	14	7	20	0.86700	0.00318	-1.47988
		<i>Hv</i>			136	0	2	5	5	0.65800	0.00245	0.75630
<i>Hv</i> WRKY83	HORVU.MOREX.r2.2HG0083410.1	<i>Hs</i>	867	563	60	0	25	19	16	0.84500	0.01101	-0.65394
		<i>Hv</i>			103	0	19	14	11	0.73700	0.00831	-0.44455
<i>Hv</i> WRKY89	HORVU.MOREX.r2.3HG0226770.1	<i>Hs</i>	1011	926	86	0	4	8	13	0.31900	0.00037	-2.08241*
		<i>Hv</i>			136	0	0	2	3	0.50000	0.00059	0.69940
<i>Hv</i> WRKY93	HORVU.MOREX.r2.5HG0384220.1	<i>Hs</i>	924	629	88	0	13	4	9	0.53900	0.00581	0.37261
		<i>Hv</i>			136	0	11	3	5	0.35800	0.00567	0.92507
<i>Hv</i> WRKY95	HORVU.MOREX.r2.1HG0057190.1	<i>Hs</i>	903	599	82	0	19	6	19	0.86100	0.00714	0.02828
		<i>Hv</i>			134	0	9	3	4	0.07300	0.00085	-1.79431*
<i>Hv</i> WRKY96	HORVU.MOREX.r2.5HG0389690.1	<i>Hs</i>	546	362	77	0	13	10	22	0.83400	0.00553	-1.74628
		<i>Hv</i>			115	0	7	5	12	0.71700	0.00636	-0.41557
<i>Hv</i> WRKY101	HORVU.MOREX.r2.3HG0238260.1	<i>Hs</i>	696	489	58	0	5	7	14	0.74700	0.00252	-0.89318
		<i>Hv</i>			116	0	0	2	3	0.06800	0.00014	-1.34749
<i>Hv</i> WRKY102	HORVU.MOREX.r2.2HG0161240.1	<i>Hs</i>	1536	1097	82	0	6	11	17	0.75500	0.00109	-1.49867
		<i>Hv</i>			126	0	1	1	3	0.53400	0.00053	1.56650

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						<i>LoF</i>	<i>Ns</i>	<i>S</i>				
<i>HvWRKY105</i>	<i>HORVU.MOREX.r2.2HG0091840.1</i>	<i>Hs</i>	1059	432	70	0	11	5	13	0.74800	0.00463	0.04064
		<i>Hv</i>			129	0	8	3	7	0.61100	0.00395	-0.42878

Short reads, which were retrieved from the publically-released exome sequencing of 90 wild barley and 137 landraces (Russell et al. 2016), were subjected for mapping and SNP calling. The accessions showing sequences with missing or heterozygote were excluded for analysis. Loss-of-function variation (*LoF*), non-synonymous (*Ns*), synonymous (*S*), haplotype diversity (*H*), nucleotide diversity ( $\pi$ ). The parameters (*H*,  $\pi$ ) are calculated using DnaSP v5.10.01 with the gaps not-considered algorithm. The Tajima's *D* in the coding sequences of *WRKYs* was performed by using VCFtools v0.1.13. \**WRKY* genes with selection signature by considering the 2.5% and 97.5% quantiles of the Tajima's *D* distribution. NA, not determined.