

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>	π	Tajima's <i>D</i>
						<i>LoF</i>	<i>Ns</i>	<i>S</i>				
<i>HvWRKY1/38</i>	<i>HORVU.MOREX.r2.6HG0471210.1</i>	<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>	<i>HORVU.MOREX.r2.7HG0616250.1</i>	<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>	<i>HORVU.MOREX.r2.5HG0400750.1</i>	<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>	<i>HORVU.MOREX.r2.2HG0091860.1</i>	<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>	<i>HORVU.MOREX.r2.3HG0222170.1</i>	<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>	<i>HORVU.MOREX.r2.7HG0577260.1</i>	<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>	<i>HORVU.MOREX.r2.5HG0360410.1</i>	<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>	<i>HORVU.MOREX.r2.5HG0423130.1</i>	<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>	<i>HORVU.MOREX.r2.2HG0130750.1</i>	<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>	<i>HORVU.MOREX.r2.5HG0432220.1</i>	<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>Hv</i> WRKY12	<i>HORVU.MOREX.r2.2HG0079820.1</i>	<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>Hv</i> WRKY13	<i>HORVU.MOREX.r2.1HG0067480.1</i>	<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>Hv</i> WRKY15	<i>HORVU.MOREX.r2.5HG0425110.1</i>	<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>Hv</i> WRKY17	<i>HORVU.MOREX.r2.1HG0023190.1</i>	<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>Hv</i> WRKY18	<i>HORVU.MOREX.r2.3HG0236250.1</i>	<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>Hv</i> WRKY19	<i>HORVU.MOREX.r2.1HG0066230.1</i>	<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>Hv</i> WRKY20	<i>HORVU.MOREX.r2.1HG0066270.1</i>	<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>Hv</i> WRKY22	<i>HORVU.MOREX.r2.5HG0392720.1</i>	<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>Hv</i> WRKY23	<i>HORVU.MOREX.r2.7HG0616260.1</i>	<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>Hv</i> WRKY26	<i>HORVU.MOREX.r2.1HG0074460.1</i>	<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>Hv</i> WRKY28	<i>HORVU.MOREX.r2.5HG0392730.1</i>	<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>N_s</i>	<i>S</i>				
<i>Hv</i> WRKY31	<i>HORVU.MOREX.r2.1HG0057170.1</i>	<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	<i>HORVU.MOREX.r2.2HG0166600.1</i>	<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	<i>HORVU.MOREX.r2.4HG0316370.1</i>	<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	<i>HORVU.MOREX.r2.4HG0294290.1</i>	<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	<i>HORVU.MOREX.r2.2HG0106180.1</i>	<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	<i>HORVU.MOREX.r2.3HG0197030.1</i>	<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	<i>HORVU.MOREX.r2.3HG0239890.1</i>	<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	<i>HORVU.MOREX.r2.5HG0386470.1</i>	<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	<i>HORVU.MOREX.r2.5HG0405940.1</i>	<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	<i>HORVU.MOREX.r2.1HG0057680.1</i>	<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	<i>HORVU.MOREX.r2.3HG0237940.1</i>	<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	<i>HORVU.MOREX.r2.2HG0107970.1</i>	<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	<i>HORVU.MOREX.r2.3HG0209060.1</i>	<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	<i>HORVU.MOREX.r2.3HG0254080.1</i>	<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	<i>HORVU.MOREX.r2.3HG0230420.1</i>	<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	<i>HORVU.MOREX.r2.5HG0400740.1</i>	<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	<i>HORVU.MOREX.r2.1HG0074420.1</i>	<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	<i>HORVU.MOREX.r2.1HG0076100.1</i>	<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	<i>HORVU.MOREX.r2.4HG0313700.1</i>	<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	<i>HORVU.MOREX.r2.4HG0284540.1</i>	<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	<i>HORVU.MOREX.r2.2HG0144420.1</i>	<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	<i>HORVU.MOREX.r2.7HG0539640.1</i>	<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>Hv</i> WRKY61	<i>HORVU.MOREX.r2.5HG0371550.1</i>	<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>Hv</i> WRKY64	<i>HORVU.MOREX.r2.3HG0226640.1</i>	<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>Hv</i> WRKY65	<i>HORVU.MOREX.r2.5HG0425470.1</i>	<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>Hv</i> WRKY66	<i>HORVU.MOREX.r2.6HG0513200.1</i>	<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>Hv</i> WRKY67	<i>HORVU.MOREX.r2.5HG0400720.1</i>	<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>Hv</i> WRKY68	<i>HORVU.MOREX.r2.2HG0153650.1</i>	<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>Hv</i> WRKY69	<i>HORVU.MOREX.r2.1HG0073000.1</i>	<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>Hv</i> WRKY70	<i>HORVU.MOREX.r2.3HG0247840.1</i>	<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>Hv</i> WRKY71	<i>HORVU.MOREX.r2.7HG0584730.1</i>	<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>Hv</i> WRKY73	<i>HORVU.MOREX.r2.5HG0446310.1</i>	<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>Hv</i> WRKY74	<i>HORVU.MOREX.r2.1HG0042200.1</i>	<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	<i>HORVU.MOREX.r2.6HG0497280.1</i>	<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	<i>HORVU.MOREX.r2.3HG0273730.1</i>	<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	<i>HORVU.MOREX.r2.2HG0129050.1</i>	<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	<i>HORVU.MOREX.r2.5HG0384210.1</i>	<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	<i>HORVU.MOREX.r2.2HG0083410.1</i>	<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	<i>HORVU.MOREX.r2.3HG0226770.1</i>	<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	<i>HORVU.MOREX.r2.5HG0384220.1</i>	<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	<i>HORVU.MOREX.r2.1HG0057190.1</i>	<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	<i>HORVU.MOREX.r2.5HG0389690.1</i>	<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	<i>HORVU.MOREX.r2.3HG0238260.1</i>	<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	<i>HORVU.MOREX.r2.2HG0161240.1</i>	<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

Genes	Gene IDs	Type	Length of fl-ORF	No. of valid sites	No. of seq.	Polymorphisms			No. of haplotypes	<i>H</i>	π	Tajima's <i>D</i>
						<i>LoF</i>	<i>Ns</i>	<i>S</i>				
<i>HvWRKY105</i>	<i>HORVULMOREX.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 (π). The parameters (*H*, π) are calculated using DnaSP v5.10.01 with the gaps not-considered algorithm. The Tajima's *D* in the coding sequences of *WRKY*s 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.