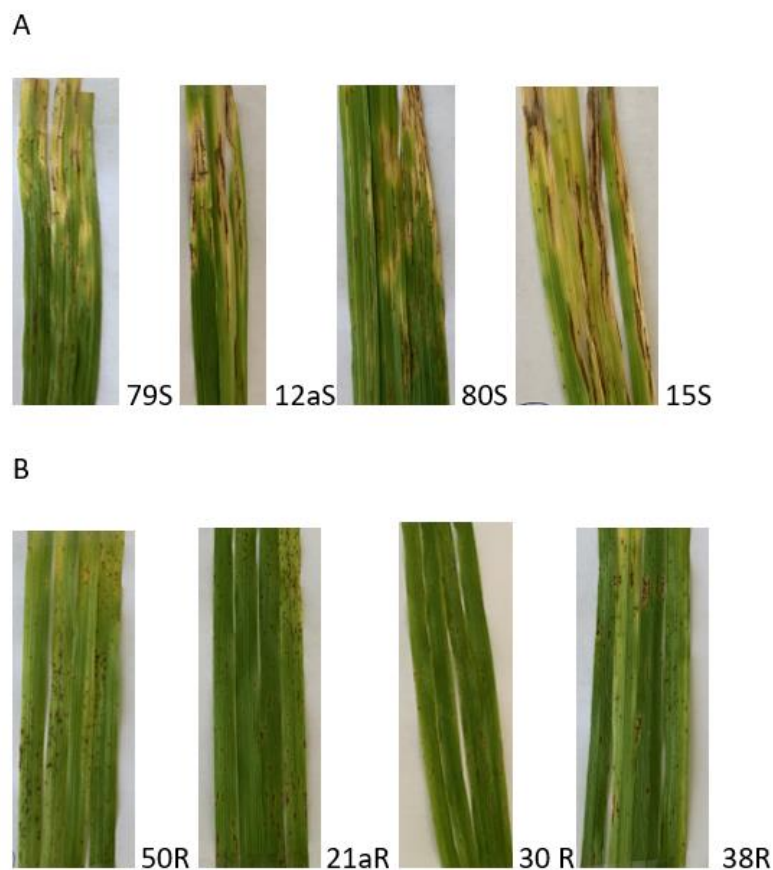
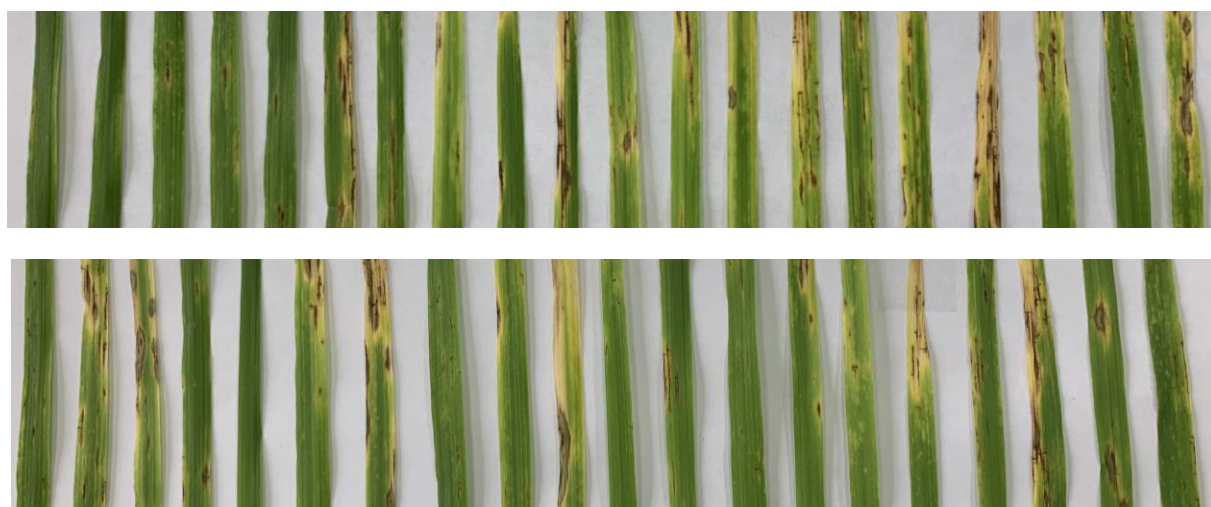


## Supplementary Materials

### Validation of Molecular Markers of Barley Net Blotch Resistance Loci on Chromosome 3H for Marker-assisted Selection



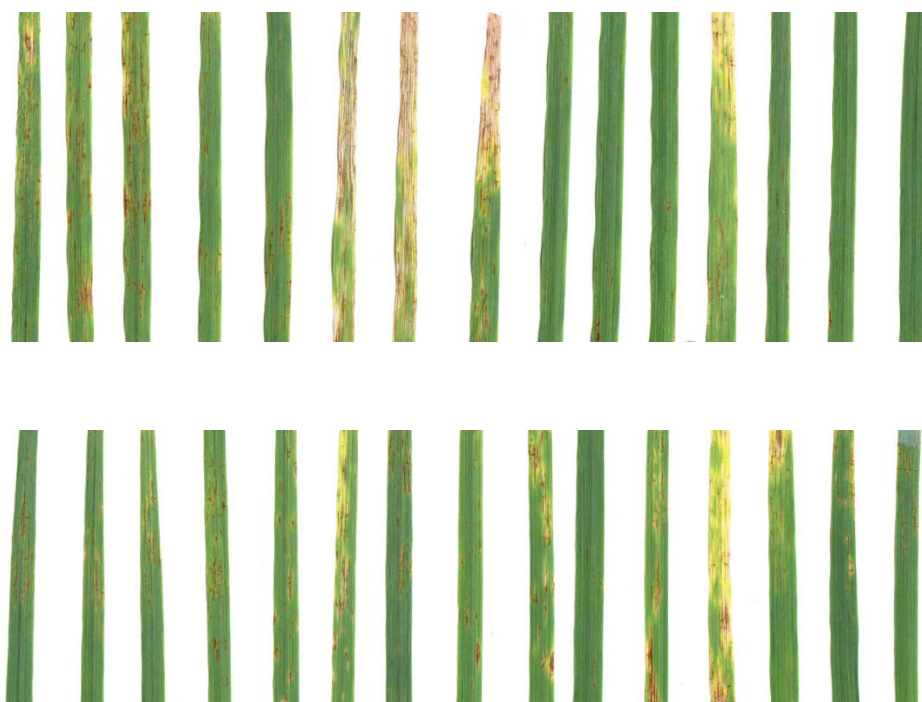
**Figure S1.** DH Lines CLS/Harrington 12 dpi with Ptt isolate F18 scored on the second leaf of the seedling. A – susceptible lines; B – resistant lines.



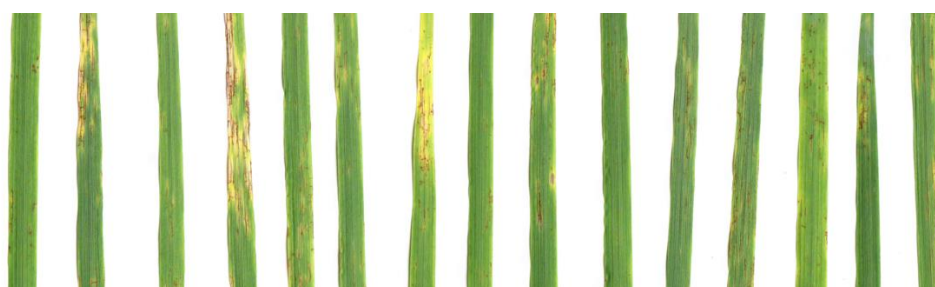
**Figure S2.** Segregation on resistance to Ptt isolate F18 12 dpi in F2 population Local k-21578/Gesine scored on the second leaf of the seedling.



**Figure S3.** Segregation on resistance to Ptt isolate F18 12 dpi in F2 population Morex/Gesine scored on the second leaf of the seedling.



**Figure S4.** Segregation on resistance to Ptt isolate F18 12 dpi in F2 population Zolo/Gesine scored on the second leaf of the seedling.





**Figure S5.** Segregation on resistance to Ptt isolate F18 12 dpi in F2 population Fox/Gesine scored on the second leaf of the seedling.

**Table S1.** KASP-genotyping results on DH and hybrid barley populations. Markers that have differentiated into resistant and susceptible DH lines, or hybrid plants are highlighted in **bold**.

**Table S1.1.** DH population Canadian Lake Shore/ Harrington.

№	SNP-marker	Position		Allele	Resistant plant	Susceptible plant
		Genetic map (cM)	Physical map (bp)			
1	<b>JHI-Hv50k-2016-179690</b>	51.63	389686103	GG	20	0
				AG	0	0
				AA	0	21
2	<b>Clone ID 3272635</b>	51.27	391906604	GG	19	0
				CG	0	0
				CC	1	20
3	<b>JHI-Hv50k-2016-183463</b>	54.53	443119491	CC	1	21
				CT	0	0
				TT	19	0
4	<b>JHI-Hv50k-2016-183478</b>	54.53	443111006	CC	19	0
				CA	0	0
				AA	1	21
5	<b>JHI-Hv50k-2016-183207</b>	52.46	442203921	TT	19	0
				TA	0	0
				AA	1	21
6	<b>JHI-Hv50k-2016-164734</b>	45.82	48713634	CC	20	0
				CT	0	0
				TT	0	21
7	<b>JHI-Hv50k-2016-165152</b>	45.82	61409056	CC	20	0
				CG	0	0
				GG	0	21
8	JHI-Hv50k-2016-166356	47.31	102070302	TT	19	21
					0	0
					0	0
9	<b>JHI-Hv50k-2016-166392</b>	47.1	112536071	CC	0	21
				TC	0	0
				TT	20	0
10	JHI-Hv50k-2016-173670	51.56	285191294	TT	19	21
					0	0
					0	0
11	JHI-Hv50k-2016-174303	51.56	301082623	GG	19	21
				AG	0	0
				AA	1	0
12	<b>JHI-Hv50k-2016-183351</b>	54.53	442550473	CC	1	21
				CT	0	0
				TT	19	0
13	JHI-Hv50k-2016-202195	98.65	553150117	CC	12	6
				CT	0	0
				TT	8	15

14	<b>Clone ID 3255462_1</b>	51.63	363531898	GG	19	0
				AG	0	0
				AA	1	21
				CC	1	21
15	<b>Clone ID 3255462_2</b>	51.63	363531871	CT	0	0
				TT	19	0

**Table S1.2.** Population F2 Fox x Gezine.

№	SNP-marker	Position		Allele	Resistant plant	Susceptible plant
		Genetic map (cM)	Physical map (bp)			
1	JHI-Hv50k-2016-179690	51.63	389686103	GG	0	4
				AG	6	0
				AA	13	14
				GG	9	2
2	<b>Clone ID 3272635</b>	51.27	391906604	CG	10	4
				CC	0	11
				CC	0	12
				CT	7	4
3	<b>JHI-Hv50k-2016-183463</b>	54.53	443119491	TT	9	2
				CC	10	2
				CA	9	4
				AA	0	12
4	<b>JHI-Hv50k-2016-183478</b>	54.53	443111006	TT	10	1
				TA	8	4
				AA	0	12
				CC	19	18
6	JHI-Hv50k-2016-164734	45.82	48713634	CT	0	0
				TT	0	0
				CC	19	17
				CG	0	0
7	JHI-Hv50k-2016-165152	45.82	61409056	GG	0	0
				TT	19	17
				CC	0	0
				CC	0	8
9	JHI-Hv50k-2016-166392	47.1	112536071	TC	4	4
				TT	15	6
				TT	19	18
				TT	0	0
10	JHI-Hv50k-2016-173670	51.56	285191294	GG	0	0
				AG	19	18
				AA	0	0
				CC	0	12
12	<b>JHI-Hv50k-2016-183351</b>	54.53	442550473	CT	9	4
				TT	10	2
				CC	19	17
				CT	0	0
13	JHI-Hv50k-2016-202195	98.65	553150117	TT	0	0
				GG	14	6
				AG	4	3
				AA	0	8
14	Clone ID 3255462_1	51.63	363531898	CC	0	7
				CT	4	4
				TT	15	6
				TT	15	6

**Table S1.3.** Population F2 Morex x Gezine.

№	SNP-marker	Position		Allele	Resistant plant	Susceptible plant
		Genetic map (cM)	Physical map (bp)			
1	JHI-Hv50k-2016-179690	51.63	389686103	GG	19	24
				AG	0	0
				AA	0	1
2	<b>Clone ID 3272635</b>	51.27	391906604	GG	6	1
				CG	11	4
				CC	2	19
3	<b>JHI-Hv50k-2016-183463</b>	54.53	443119491	CC	2	18
				CT	11	6
				TT	6	0
4	<b>JHI-Hv50k-2016-183478</b>	54.53	443111006	CC	6	0
				CA	11	6
				AA	2	19
5	<b>JHI-Hv50k-2016-183207</b>	52.46	442203921	TT	6	0
				TA	11	5
				AA	2	20
6	JHI-Hv50k-2016-164734	45.82	48713634	CC	19	25
				CT	0	0
				TT	0	0
7	JHI-Hv50k-2016-165152	45.82	61409056	CC	19	25
				CG	0	0
				GG	0	0
8	JHI-Hv50k-2016-166356	47.31	102070302	TT	19	25
					0	0
					0	0
9	JHI-Hv50k-2016-166392	47.1	112536071	CC	0	1
				TC	1	0
				TT	18	24
10	JHI-Hv50k-2016-173670	51.56	285191294	TT	0	0
					0	0
					19	25
11	JHI-Hv50k-2016-174303	51.56	301082623	GG	19	25
				AG	0	0
				AA	0	0
12	<b>JHI-Hv50k-2016-183351</b>	54.53	442550473	CC	2	20
				CT	11	5
				TT	6	0
13	JHI-Hv50k-2016-202195	98.65	553150117	CC	19	25
				CT	0	0
				TT	0	0
14	Clone ID 3255462_1	51.63	363531898	GG	18	24
				AG	1	0
				AA	0	1
15	Clone ID 3255462_2	51.63	363531871	CC	0	1
				CT	0	0
				TT	19	24

**Table S1. 4.** Population Zolo x Gezine.

№	SNP-marker	Position		Allele	Resistant plant	Susceptible plant
		Genetic map (cM)	Physical map (bp)			
1	JHI-Hv50k-2016-179690	51.63	389686103	GG	0	4
				AG	6	0
				AA	13	14
2	<b>Clone ID 3272635</b>	51.27	391906604	GG	9	2
				CG	10	4

3	<b>JHI-Hv50k-2016-183463</b>	54.53	443119491	CC	0	11
				CC	0	12
				CT	7	4
				TT	9	2
4	<b>JHI-Hv50k-2016-183478</b>	54.53	443111006	CC	10	2
				CA	9	4
				AA	0	12
5	<b>JHI-Hv50k-2016-183207</b>	52.46	442203921	TT	10	1
				TA	8	4
				AA	0	12
				CC	19	18
6	JHI-Hv50k-2016-164734	45.82	48713634	CT	0	0
				TT	0	0
				CC	19	17
7	JHI-Hv50k-2016-165152	45.82	61409056	CG	0	0
				GG	0	0
				TT	19	17
8	JHI-Hv50k-2016-166356	47.31	102070302		0	0
					0	0
				CC	0	8
9	JHI-Hv50k-2016-166392	47.1	112536071	TC	4	4
				TT	15	6
				TT	19	18
10	JHI-Hv50k-2016-173670	51.56	285191294		0	0
					0	0
				GG	19	18
11	JHI-Hv50k-2016-174303	51.56	301082623	AG	0	0
				AA	0	0
				CC	0	12
12	<b>JHI-Hv50k-2016-183351</b>	54.53	442550473	CT	9	4
				TT	10	2
				CC	19	17
13	JHI-Hv50k-2016-202195	98.65	553150117	CT	0	0
				TT	0	0
				GG	14	6
14	Clone ID 3255462_1	51.63	363531898	AG	4	3
				AA	0	8
				CC	0	7
15	Clone ID 3255462_2	51.63	363531871	CT	4	4
				TT	15	6

**Table S1.5.** Population Local (k-21578) x Gezine.

№	SNP-marker	Position		Allele	Resistant plant	Susceptible plant
		Genetic map (cM)	Physical map (bp)			
1	<b>JHI-Hv50k-2016-179690</b>	51.63	389686103	GG	18	0
				AG	1	8
				AA	1	9
				GG	0	0
2	Clone ID 3272635	51.27	391906604	CG	0	0
				CC	20	18
				CC	1	11
3	<b>JHI-Hv50k-2016-183463</b>	54.53	443119491	CT	10	7
				TT	9	0
				CC	9	0
4	<b>JHI-Hv50k-2016-183478</b>	54.53	443111006	CA	10	7
				AA	1	11
				TT	9	0
5	<b>JHI-Hv50k-2016-183207</b>	52.46	442203921	TA	10	7

6	JHI-Hv50k-2016-164734	45.82	48713634	AA	1	11
				CC	20	18
				CT	0	0
				TT	0	0
7	JHI-Hv50k-2016-165152	45.82	61409056	CC	20	18
				CG	0	0
				GG	0	0
				TT	20	18
8	JHI-Hv50k-2016-166356	47.31	102070302		0	0
					0	0
				CC	1	10
				TC	1	8
9	<b>JHI-Hv50k-2016-166392</b>	47.1	112536071	TT	18	0
				TT	0	0
					0	0
					19	18
10	JHI-Hv50k-2016-173670	51.56	285191294	GG	1	10
				AG	10	8
				AA	9	0
				CC	1	11
11	<b>JHI-Hv50k-2016-174303</b>	51.56	301082623	CT	10	7
				TT	9	0
				CC	20	18
				CT	0	0
12	<b>JHI-Hv50k-2016-183351</b>	54.53	442550473	TT	0	0
				CC	20	18
				CT	0	0
				TT	0	0
13	JHI-Hv50k-2016-202195	98.65	553150117	GG	18	0
				AG	1	8
				AA	1	10
				CC	1	10
14	Clone ID 3255462_1	51.63	363531898	CT	1	8
				TT	18	0
15	Clone ID 3255462_2	51.63	363531871			

**Table S2.** Allele-specific PCR markers of the QTL localized on chromosome 3H.

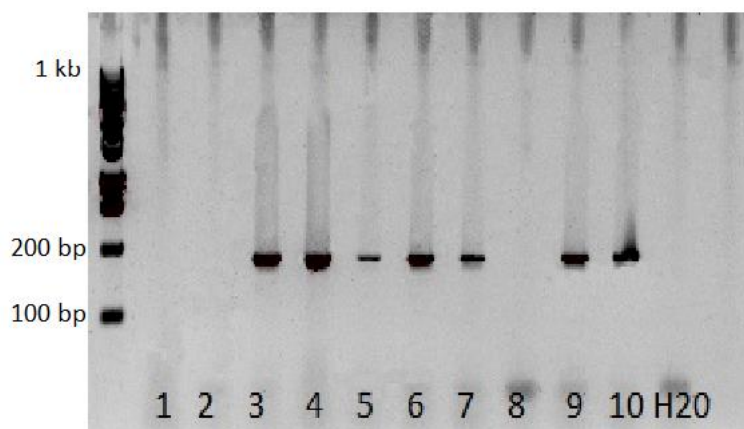
SNP	Allele	Position	Primers
Clone ID 3272635 (635)	G/C	391906604	Clone ID 3272635-F 5'CGGGAGCCTAAGAAGAGGGGTATAAC <b>C</b> - 3'
			Clone ID 3272635-R 5' GGCATAATGGGTTTTGCTTATTTTATAGACGAC 3'
JHI-Hv50k-2016- 165152 (152)	G/C	61409056	JHI-Hv50k-2016-165152 F 5' - GGTCATCTCCGTTCTTCTTTTCTTTTAC <b>C</b> 3'
			JHI-Hv50k-2016-165152-R 5' CCATCAGTTCAGGCAGCAGTGAC - 3'
JHI-Hv50k-2016- 166356 (356)	A/C	102070302	JHI-Hv50k-2016-166356-F 5' GCAGACTCCATTGCTTGTGATTTGTGAG 3'
			JHI-Hv50k-2016-166356-R 5' CCAGGCACGGATCTTTTATAGTAGTCA <b>A</b> 3'
JHI-Hv50k-2016- 183207 (207)	A/T	442203921	JHI-Hv50k-2016-183207-F 5' CAAAGAAAGTATTATTTCCATTGGTGGTGC 3'
			JHI-Hv50k-2016-183207-R 5' CAGATTATTATGCAAATGCTGGAGCAAGT <b>T</b> 3'
JHI-Hv50k-2016- 183478 (478)	C/A	443111006	JHI-Hv50k-2016-183478-F 5' GGTTCTTCTGATGTGTTTGTCTTCTACCA <b>C</b> 3'
			JHI-Hv50k-2016-183478-R 5' GTATTCCTGCCTCTATAACAGTTCTGG 3'
JHI-Hv50k-2016- 183463 (463)	T/C	443119491	JHI-Hv50k-2016-183463-F 5'GTGCCAAATTGTATAAGCCATATCATGTTTTTTT3'
			5'GTGCCAAATTGTATAAGCCATATCATGTTTTTTTC3'
			JHI-Hv50k-2016-183463-R
			5' TACACAACACGGGAGGGAGGG 3'

			JHI-Hv50k-2016-183351-F
JHI-Hv50k-2016-183351	T/C	442550473	5' GCATGAGAAGATATTTGAATGATGACATTTGCT 3'
(351)			5' GCATGAGAAGATATTTGAATGATGACATTTGCC 3'
			JHI-Hv50k-2016-183351-R
			5' CTTATATGTTGGCTTCGCATCTCGCAG 3'

**Table S3.** Resistance of barley genotypes to *Ptt* and data of molecular marker analysis.

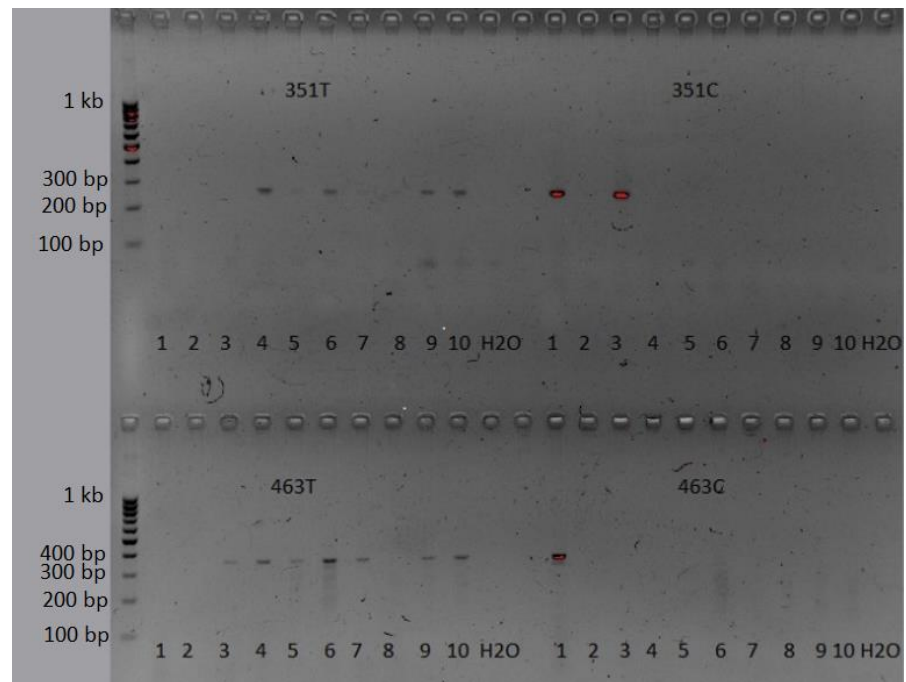
N	Barley genotype	Number of cata-log VIR	IR	Clone ID 3272635	JHI-Hv50k-2016-183463	JHI-Hv50k-2016-183351	JHI-Hv50k-2016-183478
1	Gesine Germany	-	9.5 (S)	-	-	-	-
2	Harrington, TR 306 Canada	-	9.7 (S)	-	-	-	-
3	Local Turkey	7689	5.6 (MR)	+	+	-	+
4	S-328 Mexico	28671	6.9 (MR)	+	+	+	+
5	Morex (C.I.15773) USA	26959	2.6 (R)	+	+	-	+
6	Fox (C.I.9190, NFC 883) USA	19182	3.1 (R)	+	+	+	+
7	Zolo Morocco	18552	3.2 (R)	+	+	+	+
8	Local Ecuador	21578	4.1 (R)	-	-	+	+
9	Harbin C.I. 4929 USA	19282	3.5 (R)	+	+	+	+
10	C.I. 2750, Canadian Lake Shore USA	25282	2.6 (R)	+	+	+	+
Conditions of PCR				68°C	68°C	68°C	64°C

Resistance groups: R — resistant, MR — moderately resistant, S — susceptible. «+» — fragment presents, «-» — fragment absents.

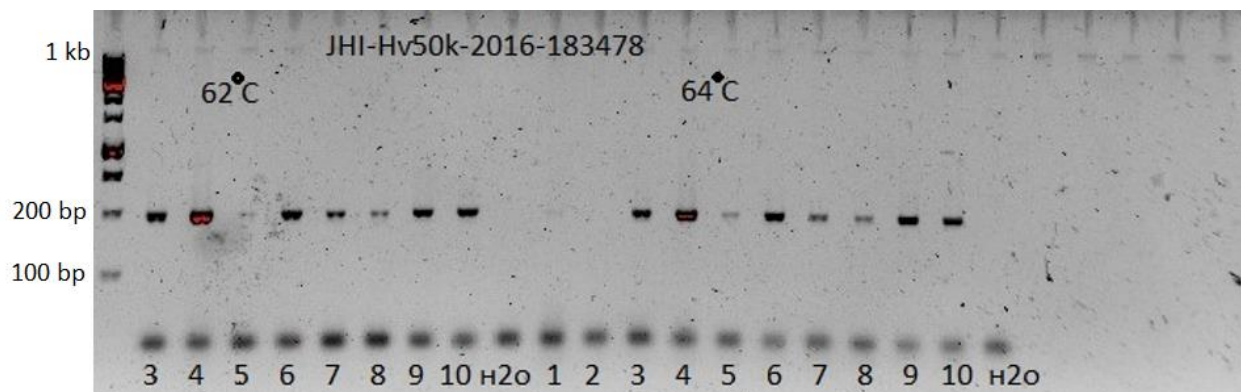


**Figure S6.** Results of PCR with primer 635 (marker Clone ID 3272635). Annealing temperature 68°C. Lines 1, 2 - Gesine, Harrington; 3 - Local Turkey k-7689, 4 - Local S-28, Mexico; 5 - Morex; 6 - Fox; 7 - Zolo; 8 - Local k-21578; 9 - Harbin, 10 - CLS. .

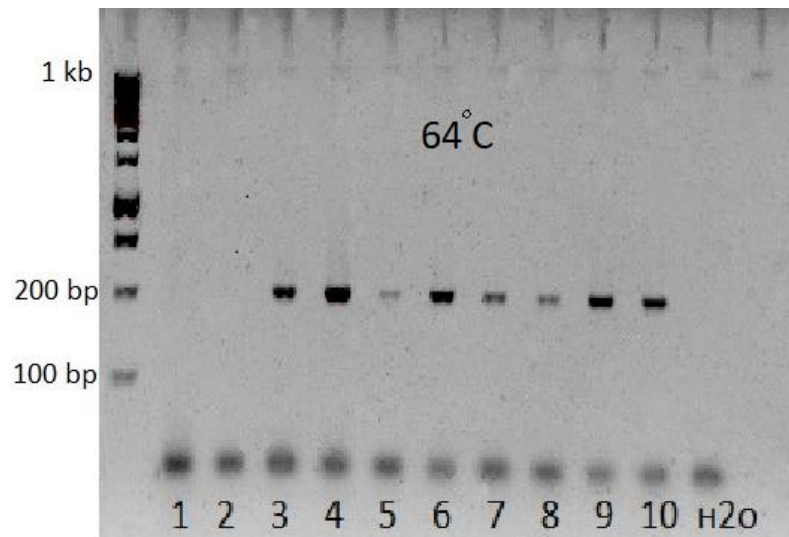




**Figure S7.** Results of PCR with primer 351 (marker JHI-Hv50k-2016-183351), haplotypes T/C and with primer 463 (marker JHI-Hv50k-2016-183463), haplotypes T/G. Annealing temperature 68°C. Lines 1, 2 - Gezine, Harrington; 3 - Local Turkey k-7689, 4 - Local S-28, Mexico; 5 - Morex; 6 - Fox; 7 - Zolo; 8 - Local k-21578; 9 - Harbin, 10 - CLS. .



**Figure S8.** Results of PCR with primer 478 (marker JHI-Hv50k-2016-183478) with different annealing temperature. Lines 1, 2 - Gezine, Harrington; 3 - Local Turkey k-7689, 4 - Local S-28, Mexico; 5 - Morex; 6 - Fox; 7 - Zolo; 8 - Local k-21578; 9 - Harbin, 10 - CLS. .



**Figure S9.** Results of PCR with primer 478 (marker JHI-Hv50k-2016-183478). Lines 1, 2 - Gezine, Harrington; 3 - Local Turkey k-7689, 4 - Local S-28, Mexico; 5 - Morex; 6 - Fox; 7 - Zolo; 8 - Local k-21578; 9 - Harbin, 10 - CLS. .

**Table S4.** Genes detected within 150 kb of the markers.

Gene	Start	End	Strand	Protein product
HORVU.MOREX.r3.3HG0236960	48677067	48677558	+	Retrotransposon protein, putative, unclassified
HORVU.MOREX.r3.3HG0236970	48711607	48714029	+	Pentatricopeptide repeat-containing protein
HORVU.MOREX.r3.3HG0236980	48715271	48715573	+	serine carboxypeptidase-like protein
HORVU.MOREX.r3.3HG0236990	48799820	48801829	+	Retrovirus-related Pol polyprotein from transposon TNT 1-94
HORVU.MOREX.r3.3HG0237000	48833008	48845918	-	
HORVU.MOREX.r3.3HG0238880	61236366	61236990	+	LURP-one-like protein
HORVU.MOREX.r3.3HG0238890	61241142	61242203	+	Formate-dependent phosphoribosyl-glycinamide formyltransferase
HORVU.MOREX.r3.3HG0238900	61242769	61244391	+	Retrotransposon protein, putative, unclassified
HORVU.MOREX.r3.3HG0238910	61245109	61245552	+	Retrotransposon protein, putative, unclassified
HORVU.MOREX.r3.3HG0238920	61245657	61246424	+	Retrotransposon protein, putative, unclassified
HORVU.MOREX.r3.3HG0238930	61246569	61247012	+	LINE-1 reverse transcriptase
HORVU.MOREX.r3.3HG0238940	61247636	61248241	+	Dihydroorotate dehydrogenase (quinone)
HORVU.MOREX.r3.3HG0238950	61249609	61249986	-	Cellulose synthase
HORVU.MOREX.r3.3HG0238960	61409080	61411432	-	DUF581 family protein
HORVU.MOREX.r3.3HG0246070	112377399	112378299	+	plant/protein (Protein of unknown function, DUF538)
HORVU.MOREX.r3.3HG0246080	112536266	112537417	+	plant/protein (Protein of unknown function, DUF538)
HORVU.MOREX.r3.3HG0246090	112545595	112545939	+	B-block-binding subunit of TFIIC protein
HORVU.MOREX.r3.3HG0265210	301082037	301085955	-	Tudor/PWWP/MBT superfamily protein
HORVU.MOREX.r3.3HG0265220	301617534	301617923	+	ABC transporter C family member 5
HORVU.MOREX.r3.3HG0265230	301676118	301676420	-	<b>Leucine-rich repeat protein kinase family protein</b>
HORVU.MOREX.r3.3HG0265240	301677916	301678215	-	<b>Leucine-rich repeat protein kinase</b>

				<b>family protein</b>
HORVU.MOREX.r3.3HG0265250	301678278	301678526	-	Cytochrome b
HORVU.MOREX.r3.3HG0265260	301881962	301883566	-	Capsule polysaccharide modification protein LipA
HORVU.MOREX.r3.3HG0271520	363571520	363572113	+	Retrotransposon protein, putative, unclassified
HORVU.MOREX.r3.3HG0271510	363563999	363564301	+	Retrovirus-related Pol polyprotein from transposon TNT 1-94
HORVU.MOREX.r3.3HG0271530	363582046	363586052	-	RNA binding protein
HORVU.MOREX.r3.3HG0274630	389485559	389488352	-	Receptor-like kinase
HORVU.MOREX.r3.3HG0274640	389616921	389617353	+	Serine/threonine protein phosphatase 7 long form isogeny
HORVU.MOREX.r3.3HG0274650	389684780	389686164	+	DUF1645 family protein
HORVU.MOREX.r3.3HG0274660	389689450	389689764	+	Ethylene-responsive transcription factor CRF1
HORVU.MOREX.r3.3HG0274670	389741871	389742961	+	B3 domain-containing protein
HORVU.MOREX.r3.3HG0274680	389747874	389752422	+	Ulp1 protease family, C-terminal catalytic domain containing protein
HORVU.MOREX.r3.3HG0274690	389753252	389754374	+	Ulp1 protease family, C-terminal catalytic domain containing protein
HORVU.MOREX.r3.3HG0274700	389754394	389755415	+	Sentrin/sumo-specific protease, putative
HORVU.MOREX.r3.3HG0274710	389756181	389756732	-	Protein FAR1-RELATED SEQUENCE 5
HORVU.MOREX.r3.3HG0274720	389757099	389757623	-	Protein FAR1-RELATED SEQUENCE 5
HORVU.MOREX.r3.3HG0274730	389757939	389758391	-	Protein FAR1-RELATED SEQUENCE 5
HORVU.MOREX.r3.3HG0274740	389758813	389760395	-	Protein FAR1-RELATED SEQUENCE 5
HORVU.MOREX.r3.3HG0274750	389760518	389760871	-	Membrane protein insertase YidC
HORVU.MOREX.r3.3HG0274760	389761791	389762243	+	Transposon protein Pong sub-class
HORVU.MOREX.r3.3HG0274770	389764021	389764527	+	Transposon protein, putative, Pong sub-class
HORVU.MOREX.r3.3HG0281310	442181350	442186240	+	Receptor-like kinase
HORVU.MOREX.r3.3HG0281320	442194446	442195237	+	Receptor-like kinase
HORVU.MOREX.r3.3HG0281330	442196573	442197603	+	Kinase family protein
HORVU.MOREX.r3.3HG0281340	442198250	442203897	+	Receptor-like protein kinase
HORVU.MOREX.r3.3HG0281350	442204330	442206675	+	Protein kinase family protein
HORVU.MOREX.r3.3HG0281360	442206893	442207453	+	Zinc transporter ZIP10
HORVU.MOREX.r3.3HG0281370	442208298	442208603	-	Transposon protein, putative, Pong sub-class
HORVU.MOREX.r3.3HG0281380	442210294	442210986	+	50S ribosomal protein L7Ae
HORVU.MOREX.r3.3HG0281390	442211590	442212897	+	Reticulon-like protein
HORVU.MOREX.r3.3HG0281400	442213272	442218020	-	Phosphopantetheine adenylyltransferase
HORVU.MOREX.r3.3HG0281410	442352371	442352577	-	kinesin like protein for actin based chloroplast movement 2
HORVU.MOREX.r3.3HG0281420	442352819	442353157	-	Multidrug resistance protein MdtC
HORVU.MOREX.r3.3HG0281430	442543352	442552369	+	DNA repair helicase
HORVU.MOREX.r3.3HG0281440	442553206	442560684	+	Serine/threonine-protein phosphatase
HORVU.MOREX.r3.3HG0281450	442562728	442562976	-	Transposon protein, putative, Pong sub-class
HORVU.MOREX.r3.3HG0281460	442562992	442563453	-	Transposon protein, putative, Pong sub-class
HORVU.MOREX.r3.3HG0281470	442564504	442564906	+	Eukaryotic translation initiation factor 3 subunit A
HORVU.MOREX.r3.3HG0281480	442565698	442566123	-	Translation initiation factor IF-2
HORVU.MOREX.r3.3HG0281490	442645170	442645541	+	Polycystic kidney disease and receptor for egg jelly-related protein
HORVU.MOREX.r3.3HG0281500	442861104	442862152	-	Glutathione S-transferase
HORVU.MOREX.r3.3HG0281510	442908345	442910800	+	Protein PLASTID MOVEMENT IM-PAIRED 2

HORVU.MOREX.r3.3HG0281520	442929976	442931294	+	Zinc knuckle family protein, expressed
HORVU.MOREX.r3.3HG0281530	443109143	443116099	+	alpha/beta hydrolase family protein
HORVU.MOREX.r3.3HG0281540	443118553	443121983	-	RING/U-box superfamily protein
HORVU.MOREX.r3.3HG0281550	443245009	443245743	-	UDP-sugar pyrophosphorylase 1
HORVU.MOREX.r3.3HG0281560	443247926	443248276	-	Regulator of chromosome condensation (RCC1) family protein
HORVU.MOREX.r3.3HG0281570	443248705	443249118	-	NADH-quinone oxidoreductase subunit A
HORVU.MOREX.r3.3HG0303500	553060090	553066049	-	zinc finger CCCH domain protein
HORVU.MOREX.r3.3HG0303510	553144785	553146073	+	Kinesin-like protein
HORVU.MOREX.r3.3HG0303520	553149040	553150591	+	30S ribosomal protein S12
HORVU.MOREX.r3.3HG0303530	553151840	553153270	+	Nuclear transcription factor Y subunit B
HORVU.MOREX.r3.3HG0303540	553155057	553164050	-	V-type proton ATPase subunit a
HORVU.MOREX.r3.3HG0303550	553194370	553196493	+	DNA glycosylase
HORVU.MOREX.r3.3HG0303560	553222296	553226671	-	Interactor of constitutive active ROPs 2, chloroplastic
HORVU.MOREX.r3.3HG0303570	553264762	553265418	-	Myb/SANT-like DNA-binding domain protein
HORVU.MOREX.r3.3HG0303580	553265453	553265812	-	proline-, glutamic acid/leucine-rich pro- tein
HORVU.MOREX.r3.3HG0303590	553285525	553289591	+	Protein IQ-DOMAIN 1