

Table S7 The features of indel and snp in XG, CKX and HZP

region	type	gene	loc	type	HZP	CKX	XG	total
LSC	intergenic	<i>trnH-GUG_psbA</i>	131	snp	G	A	A	4
LSC	intergenic	<i>trnH-GUG_psbA</i>	209	snp	G	A	A	
LSC	intergenic	<i>trnH-GUG_psbA</i>	351	indel	AAGGA	----	----	
LSC	intergenic	<i>trnH-GUG_psbA</i>	372	indel	AAA	AA-	AA-	
LSC	intergenic	<i>psbA-trnK-UUU</i>	1573	snp	A	C	C	1
LSC	gene	<i>matK</i>	2126	snp	A	G	G	5
LSC	gene	<i>matK</i>	2197	snp	G	A	A	
LSC	gene	<i>matK</i>	2970	snp	A	C	C	
LSC	gene	<i>matK</i>	3085	snp	A	C	C	
LSC	gene	<i>matK</i>	3311	snp	G	A	A	
LSC	gene	<i>trnK-UUU</i>	3901	snp	C	T	T	1
LSC	intergenic	<i>trnK-UUU_rps16</i>	4413	indel	A	A	-	4
LSC	intergenic	<i>trnK-UUU_rps16</i>	4440	snp	T	G	G	
LSC	intergenic	<i>trnK-UUU_rps16</i>	4798	indel	-	A	-	
LSC	intergenic	<i>trnK-UUU_rps16</i>	4818	indel	-----	TTTATTCAATCA	TTTATTCA ATCA	
LSC	intergenic	<i>rps16_rps16</i>	5514	indel	AAA	A--	A--	2
LSC	intergenic	<i>rps16_rps16</i>	5894	snp	T	G	G	
LSC	intergenic	<i>rps16_trnQ-UUG</i>	6327	snp	A	G	G	1
LSC	intergenic	<i>rps17_trnQ-UUG</i>	6406	indel	GAAATGAAATTTTTT TT--ATTTTATTAATA AAAATA	GAAATGAAATTT TTTTT--ATTTTAT TAATAAAAATA	----- ----- ---	1
LSC	intergenic	<i>rps18_trnQ-UUG</i>	6496	snp	C	G	G	1
LSC	intergenic	<i>rps16_trnQ-UUG</i>	6958	indel	T	-	-	1

LSC	gene	<i>psbK</i>	8344	snp	A	C	C	1
LSC	intergenic	<i>psbK_psbI</i>	8548	snp	A	C	C	4
LSC	intergenic	<i>psbK_psbI</i>	8657	snp	G	C	C	
LSC	intergenic	<i>psbK_psbI</i>	8703	snp	A	C	C	
LSC	intergenic	<i>psbK_psbI</i>	8791	indel	T	-	-	
LSC	intergenic	<i>psbI_trnS-GCU</i>	8936	indel	AA	--	--	1
LSC	intergenic	<i>trnS-GCU_trnG-GCC</i>	9208	snp	A	C	C	4
LSC	intergenic	<i>trnS-GCU_trnG-GCC</i>	9316	indel	-----	TATAAA	TATAAA	
LSC	intergenic	<i>trnS-GCU_trnG-GCC</i>	9461	indel	--	AA	AA	
LSC	intergenic	<i>trnS-GCU_trnG-GCC</i>	9807	snp	T	A	A	
LSC	gene	<i>trnG-GCC</i>	10017	snp	A	C	C	3
LSC	gene	<i>trnG-GCC</i>	10159	snp	A	C	C	
LSC	gene	<i>trnG-GCC</i>	10500	snp	G	G	A	
LSC	intergenic	<i>trnR-UCU_atpA</i>	11002	indel	-C	--	--	1
LSC	intergenic	<i>atpA_atpF</i>	12592	indel	AAAAA	-----	-----	1
LSC	gene	<i>atpF</i>	12955	snp	C	T	T	1
LSC	intergenic	<i>atpH_atpI</i>	14689	snp	G	G	T	4
LSC	intergenic	<i>atpH_atpI</i>	14757	snp	C	T	T	
LSC	intergenic	<i>atpH_atpI</i>	15103	indel	T	-	-	
LSC	intergenic	<i>atpH_atpI</i>	15564	snp	T	G	G	
LSC	intergenic	<i>atpI_rps2</i>	16490	indel	T	-	-	2
LSC	intergenic	<i>atpI_rps2</i>	16504	snp	A	G	G	
LSC	gene	<i>rps2</i>	16578	snp	A	G	G	1
LSC	intergenic	<i>rps2_rpoC2</i>	17324	indel	A	-	-	1
LSC	gene	<i>rpoC2</i>	18416	snp	G	A	A	4
LSC	gene	<i>rpoC2</i>	18543	snp	G	A	A	

LSC	gene	<i>rpoC2</i>	18621	snp	T	T	C	
LSC	gene	<i>rpoC2</i>	18764	snp	T	G	G	
LSC	gene	<i>rpoC1</i>	22935	snp	T	C	C	1
LSC	gene	<i>rpoB</i>	24713	snp	C	T	T	3
LSC	gene	<i>rpoB</i>	26105	snp	G	T	T	
LSC	gene	<i>rpoB</i>	27299	snp	T	C	C	
LSC	intergenic	<i>rpoB_trnC-GCA</i>	28170	snp	C	A	A	2
LSC	intergenic	<i>rpoB_trnC-GCA</i>	28304	indel	T	-	-	
LSC	intergenic	<i>trnC-GCA_petN</i>	29522	snp	C	T	T	1
LSC	intergenic	<i>petN_psbM</i>	30552	indel	----	CTTTT	CTTTT	5
LSC	intergenic	<i>petN_psbM</i>	30677	snp	G	T	T	
LSC	intergenic	<i>petN_psbM</i>	30678	snp	G	C	C	
LSC	intergenic	<i>petN_psbM</i>	30679	snp	A	C	C	
LSC	intergenic	<i>petN_psbM</i>	30780	snp	G	A	A	
LSC	gene	<i>psbM</i>	31081	snp	G	T	T	1
LSC	intergenic	<i>psbM_trnD-GUC</i>	31750	snp	A	G	G	2
LSC	intergenic	<i>psbM_trnD-GUC</i>	31823	snp	A	G	G	
LSC	intergenic	<i>trnE-UUC_trnT-GGU</i>	32582	snp	A	C	C	5
LSC	intergenic	<i>trnE-UUC_trnT-GGU</i>	32657	indel	A--	A--	---	
LSC	intergenic	<i>trnE-UUC_trnT-GGU</i>	32719	indel	-----	AAGAAA	AAGAAA	
LSC	intergenic	<i>trnE-UUC_trnT-GGU</i>	32899	snp	C	T	T	
LSC	intergenic	<i>trnE-UUC_trnT-GGU</i>	32992	indel	-	A	A	
LSC	intergenic	<i>trnT-GGU_psbD</i>	33297	indel	T-----	TTTTTT	TTTTT-	4
LSC	intergenic	<i>trnT-GGU_psbD</i>	33302	indel	-	T	-	
LSC	intergenic	<i>trnT-GGU_psbD</i>	33885	snp	T	G	G	
LSC	intergenic	<i>trnT-GGU_psbD</i>	33902	snp	C	A	A	

LSC	gene	<i>psbC</i>	36285	snp	A	C	C	1
LSC	intergenic	<i>trnS-UGA_psbZ</i>	37705	indel	-	A	A	1
LSC	intergenic	<i>psbZ_trnG-UCC</i>	38192	indel	A	-	-	4
LSC	intergenic	<i>psbZ_trnG-UCC</i>	38226	indel	AA	--	--	
LSC	intergenic	<i>psbZ_trnG-UCC</i>	38227	indel	A	-	-	
LSC	intergenic	<i>psbZ_trnG-UCC</i>	38262	snp	C	T	T	
LSC	intergenic	<i>trnG-UCC_trnfM-CAU</i>	38579	indel	AA	A-	A-	1
LSC	gene	<i>psaB</i>	40204	snp	G	A	A	1
LSC	gene	<i>psaA</i>	42347	snp	A	G	G	1
LSC	intergenic	<i>psaA_ycf3</i>	44242	snp	A	G	G	3
LSC	intergenic	<i>psaA_ycf3</i>	44265	snp	A	G	G	
LSC	intergenic	<i>psaA_ycf3</i>	44266	indel	A	-	-	
LSC	gene	<i>ycf3</i>	46320	indel	--	A-	A-	1
LSC	intergenic	<i>ycf3_trnS-GGA</i>	46574	indel	AAAA	----	----	1
LSC	intergenic	<i>trnT-UGU_trnL-UAA</i>	48871	indel	-----	TAAATAGAATTT CAAA	TAAATAGA ATTTCAAA	2
LSC	intergenic	<i>trnT-UGU_trnL-UAA</i>	48935	indel	-----	TATTACGATA	TATTACGA TA	
LSC	intergenic	<i>trnL-UAA_trnF-GAA</i>	50375	indel	----	TTATC	TTATC	2
LSC	intergenic	<i>trnL-UAA_trnF-GAA</i>	50533	snp	G	A	A	
LSC	intergenic	<i>trnF-GAA_ndhJ</i>	50899	snp	A	T	T	3
LSC	intergenic	<i>trnF-GAA_ndhJ</i>	50900	snp	A	T	T	
LSC	intergenic	<i>trnF-GAA_ndhJ</i>	50901	snp	A	T	T	
LSC	gene	<i>ndhJ</i>	51662	snp	A	T	T	2
LSC	gene	<i>ndhJ</i>	51663	snp	T	C	C	
LSC	intergenic	<i>ndhK_ndhC</i>	52745	indel	--	TT	T-	1

LSC	intergenic	<i>ndhC_trnV-UAC</i>	53139	snp	T	C	C	3
LSC	intergenic	<i>ndhC_trnV-UAC</i>	53332	indel	TTT	---	---	
LSC	intergenic	<i>ndhC_trnV-UAC</i>	53490	snp	T	A	A	
LSC	gene	<i>trnV-UAC</i>	53551	snp	G	T	T	2
LSC	gene	<i>trnV-UAC</i>	53711	snp	G	A	G	
LSC	gene	<i>atpB</i>	55447	snp	G	A	A	2
LSC	gene	<i>atpB</i>	56183	snp	G	A	A	
LSC	intergenic	<i>atpB_rbcL</i>	56534	snp	A	G	G	3
LSC	intergenic	<i>atpB_rbcL</i>	56836	snp	T	C	C	
LSC	intergenic	<i>atpB_rbcL</i>	56889	indel	----	TTTT	TTTT	
LSC	intergenic	<i>rbcL_accD</i>	59107	indel	---	TT-	T--	1
LSC	gene	<i>accD</i>	59625	snp	G	T	T	4
LSC	gene	<i>accD</i>	59681	snp	C	A	A	
LSC	gene	<i>accD</i>	59840	snp	T	G	G	
LSC	gene	<i>accD</i>	59989	snp	A	T	T	
LSC	intergenic	<i>accD_psaI</i>	60891	indel	-	T	T	1
LSC	intergenic	<i>ycf4_cemA</i>	62688	snp	A	C	C	3
LSC	intergenic	<i>ycf4_cemA</i>	62845	snp	C	T	T	
LSC	intergenic	<i>ycf4_cemA</i>	63272	indel	T--	TT-	TTT	
LSC	intergenic	<i>petA_psbJ</i>	65588	indel	TT	--	--	3
LSC	intergenic	<i>petA_psbJ</i>	66012	snp	A	C	C	
LSC	intergenic	<i>petA_psbJ</i>	66100	indel	-----	ATTAT	ATTAT	
LSC	intergenic	<i>petL_petG</i>	68593	snp	C	T	T	1
LSC	gene	<i>rps18</i>	70702	indel	ACTTTTCTTAAATC CAAGCG	-----	-----	1
LSC	intergenic	<i>rpl20_rps12</i>	71616	snp	G	A	A	2



IRA	intergenic	<i>rrn5_trnR-ACG</i>	110680	indel	-	A	A	1
IRA	intergenic	<i>trnR-ACG_trnN-GUU</i>	111065	indel	CTTTTCTTTTT	CTTTTT-----	CTTTTT-----	1
							-	
IRA	gene	<i>ycf1</i>	112645	snp	A	C	C	4
IRA	gene	<i>ycf1</i>	112883	indel	GAGACATGCTATAAA AATAGCCCAATTTAT GAAGCTTCTTATCTG GATGGGAATCAAGA AAATTCGAAGTTAAA AATATTTGAAGATAA AAATA	----- ----- ----- ----- ----- ----- -----	----- ----- ----- ----- ----- ----- -----	
IRA	gene	<i>ycf1</i>	112961	indel	T	-	-	
IRA	gene	<i>ycf1</i>	112978	snp	A	T	T	
IRA	intergenic	<i>ycf1_ndhF</i>	112997	indel	TAAGATTAA	-----	-----	1
SSC	gene	<i>ndhF</i>	113888	snp	G	A	A	4
SSC	gene	<i>ndhF</i>	114035	snp	A	G	G	
SSC	gene	<i>ndhF</i>	114634	snp	C	G	G	
SSC	gene	<i>ndhF</i>	115046	snp	A	G	G	
SSC	intergenic	<i>ndhF_rpl32</i>	115567	snp	A	C	C	4
SSC	intergenic	<i>ndhF_rpl32</i>	115710	indel	-	T	T	
SSC	intergenic	<i>ndhF_rpl32</i>	115713	indel	A	-	-	
SSC	intergenic	<i>ndhF_rpl32</i>	115860	snp	C	T	T	
SSC	intergenic	<i>rpl32_trnL-UAG</i>	116325	snp	T	G	G	3
SSC	intergenic	<i>rpl32_trnL-UAG</i>	116386	snp	T	G	G	
SSC	intergenic	<i>rpl32_trnL-UAG</i>	116394	indel	T	-	-	
SSC	intergenic	<i>trnL-UAG_cesA</i>	117236	indel	-	T	T	1

SSC	gene	<i>ccsA</i>	118076	snp	T	A	A	1
SSC	intergenic	<i>ccsA_ndhD</i>	118240	snp	G	T	T	2
SSC	intergenic	<i>ccsA_ndhD</i>	118333	snp	T	A	A	
SSC	gene	<i>ndhD</i>	119907	snp	T	C	C	1
SSC	intergenic	<i>psaC_ndhE</i>	120438	snp	A	C	C	1
SSC	gene	<i>ndhG</i>	121282	snp	T	C	C	2
SSC	gene	<i>ndhG</i>	121611	snp	A	A	G	
SSC	intergenic	<i>ndhG_ndhI</i>	121724	indel	TT----	-----	-----	1
SSC	gene	<i>ndhI</i>	122272	snp	C	G	G	1
SSC	gene	<i>ndhA</i>	123334	snp	A	C	C	3
SSC	gene	<i>ndhA</i>	123634	indel	-	T	-	
SSC	gene	<i>ndhA</i>	123934	indel	-----	GTAATCCATATG	GTAATCCA TATG	
SSC	gene	<i>ndhH</i>	125618	snp	C	C	T	3
SSC	gene	<i>ndhH</i>	125696	snp	G	A	A	
SSC	gene	<i>ndhH</i>	125979	snp	C	T	T	
SSC	intergenic	<i>ndhH_rps15</i>	126002	snp	T	G	G	2
SSC	intergenic	<i>ndhH_rps15</i>	126086	indel	T	-	-	
SSC	intergenic	<i>rps15_yefl</i>	126583	snp	T	G	G	2
SSC	intergenic	<i>rps15_yefl</i>	126676	snp	T	C	C	
SSC	gene	<i>yefl</i>	127238	snp	T	C	C	18
SSC	gene	<i>yefl</i>	127582	snp	C	T	T	
SSC	gene	<i>yefl</i>	127930	indel	TTT	---	TTT	
SSC	gene	<i>yefl</i>	128136	snp	G	A	A	
SSC	gene	<i>yefl</i>	128638	snp	G	T	T	
SSC	gene	<i>yefl</i>	128650	snp	A	C	C	



SSC	gene	<i>yefl</i>	128653	snp	C	T	T	
SSC	gene	<i>yefl</i>	128848	snp	G	T	G	
SSC	gene	<i>yefl</i>	128849	snp	A	C	A	
SSC	gene	<i>yefl</i>	129175	snp	T	G	G	
SSC	gene	<i>yefl</i>	129305	indel	TTTTTC	-----	-----	
SSC	gene	<i>yefl</i>	129370	snp	G	G	T	
SSC	gene	<i>yefl</i>	129374	snp	G	T	T	
SSC	gene	<i>yefl</i>	130158	snp	A	G	G	
SSC	gene	<i>yefl</i>	130472	snp	A	G	G	
SSC	gene	<i>yefl</i>	130646	snp	A	C	C	
SSC	gene	<i>yefl</i>	131326	snp	A	T	T	
SSC	gene	<i>yefl</i>	131642	snp	T	G	G	
IRB	intergenic	<i>trnN-GUU_trnR-ACG</i>	133217	indel	AAAAAAGAAAAAG	AAAAAAG-----	AAAAAAG----	1
							--	
IRB	intergenic	<i>trnR-ACG_rrn5</i>	133617	indel	-	T	T	1
IRB	intergenic	<i>trnV-GAC_rps7</i>	142133	indel	-----	CTAATAGAATAG	CTAATAGA	2
						AAAAGA	ATAGAAAA	
							GA	
IRB	intergenic	<i>trnV-GAC_rps7</i>	143770	snp	G	A	A	
IRB	gene	<i>yef15</i>	148122	indel	AATAC	-----	-----	1
IRB	gene	<i>yef2</i>	153480	snp	G	A	A	2
IRB	gene	<i>yef2</i>	154116	snp	C	A	A	
IRB	gene	<i>rpl2</i>	157318	snp	C	A	A	1