Molecular characterisation of commercial rice types using SSR and ISSR markers

Oryza sativa L. – SSR genotypes and ISSR band profiles

1. Dataset description

Seven commercial rice types available on the Greek market were analysed with two types of molecular markers: ten microsatellite (simple sequence repeat, SSR) loci and ten inter simple sequence repeat (ISSR) primers. SSR markers are co-dominant and are reported as allele sizes (bp). ISSR markers are dominant and are reported as the presence (1) or absence (0) of each amplified band. Four samples were milled rice and three were paddy rice (with husk).

Species	*Oryza sativa* L.
Samples	Glase, Nychaki, Bonnet, Carolina (milled rice); Medium-grain, Long-grain and Carolina (paddy rice)
SSR markers	10 loci on 10 chromosomes
ISSR markers	10 UBC primers; 107 scored bands (91 polymorphic, 85.0%)

2. SSR markers

Table 1. SSR loci: chromosome, repeat motif, primer sequences, number of alleles and allele size range

Locus	Chr.	Repeat motif	Forward primer (5′→3′)	Reverse primer (5′→3′)	No. of alleles	Size range (bp)
RM119	IV	(GTC)6	CATCCCCCTGCTGCTGCTGCTG	CGCCGGATGTGTGGGACTAGCG	2	166–169
RM161	V	(AG)20	TGCAGATGAGAAGCGGCGCCTC	TGTGTCATCAGACGGCGCTCCG	4	179–185
RM212	I	(CT)24	CCACTTTCAGCTACTACCAG	CACCCATTTGTCTCTCATTATG	1	116
RM424	II	(CAT)9	TTTGTGGCTCACCAGTTGAG	TGGCGCATTCATGTCATC	2	241–280
RM484	X	(AT)9	TCTCCCTCCTCACCATTGTC	TGCTGCCCTCTCTCTCTCTC	3	291–297
RM149	VIII	(AT)10	GCTGACCAACGAACCTAGGCCG	GTTGGAAGCCTTTCCTCGTAACACG	3	241–245
RM224	XI	(AAG)8(AG)13	ATCGATCGATCTTCACGAGG	TGCTATAAAAGGCATTCGGG	2	156–158
RM276	VI	(AG)8A3(GA)33	CTCAACGTTGACACCTCGTG	TCCTCCATCGAGCAGTATCA	2	83–123
RM316	IX	(GT)8-(TG)9(TTTG)4(TG)4	CTAGTTGGGCATACGATGGC	ACGCTTATATGTTACGTCAAC	6	197–213
RM418	VII	(ATT)21	TCGCGTATCGTCATGCATAG	GAGCACATATGCCACGTACG	3	278–299

Table 2. SSR genotypes: allele sizes (bp) of the seven rice samples

Locus	Glase	Nychaki	Bonnet	Carolina	Medium-grain (paddy)	Long-grain (paddy)	Carolina (paddy)
RM119	166	166	166	166	166/169	166	166/169
RM161	183/185	183/185	183/185	181/183	183/185	179	183/185
RM212	116	116	116	116	116	116	116
RM424	241/280	241	241	241	241/280	241	241/280
RM484	291	295/297	295/297	295/297	291	291/297	291
RM149	241	241	241	241	243/245	241	241
RM224	156/158	–	–	156/158	156/158	156/158	156/158
RM276	83	123	123	83/123	83	83	83
RM316	211/213	199/201	199/201	201/205	197/213	205	197/213
RM418	299	278	278	299	299	287/299	299

One value = one allele detected; two values (e.g. 183/185) = two alleles. – = no amplification.

3. ISSR markers

Table 3. ISSR primers, number of scored bands and polymorphism

Primer	Sequence (5′→3′)	No. of bands	Polymorphic bands	Polymorphism (%)	Size range (bp)
UBC-807	AGAGAGAGAGAGAGAGT	13	12	92.3	313–2161
UBC-808	AGAGAGAGAGAGAGAGC	6	5	83.3	489–1393
UBC-811	GAGAGAGAGAGAGAGAC	10	10	100.0	366–1847
UBC-814	CTCTCTCTCTCTCTCTA	7	7	100.0	630–2057
UBC-816	CACACACACACACACAT	17	17	100.0	606–4481
UBC-823	TCTCTCTCTCTCTCTCC	16	15	93.8	308–3650
UBC-827	ACACACACACACACACG	11	7	63.6	781–3361
UBC-834	AGAGAGAGAGAGAGAGYT	9	6	66.7	325–2289
UBC-860	TGTGTGTGTGTGTGTGRA	11	9	81.8	511–2577
UBC-881	GGGTGGGGTGGGGTG	7	3	42.9	737–2589
Total		**107**	**91**	**85.0**	**308–4481**

Y = C/T; R = A/G.

Table 4. ISSR band profiles (1 = band present, 0 = band absent)

Primer	Band (bp)	Glase	Nychaki	Bonnet	Carolina	Medium-grain (paddy)	Long-grain (paddy)	Carolina (paddy)
UBC-807 AGAGAGAGAGAGAGAGT	313	0	0	1	0	1	0	0
	445	0	0	1	1	1	1	1
	520	0	0	1	0	0	0	0
	630	1	1	0	1	1	1	1
	655	0	0	1	0	0	0	0
	851	0	0	1	0	0	0	1
	1084	1	1	0	0	0	0	0
	1107	0	0	0	1	1	1	1
	1302	1	1	0	0	1	1	0
	1440	0	0	1	1	0	0	1
	1603	1	1	1	1	1	1	1
	1831	1	1	0	1	1	1	1
	2161	1	1	0	1	1	1	1
UBC-808 AGAGAGAGAGAGAGAGC	489	1	1	1	1	1	1	1
	792	1	0	0	0	0	0	0
	866	0	1	0	0	0	0	0
	1117	1	1	0	0	0	1	0
	1202	0	0	0	1	0	1	1
	1393	1	1	0	0	0	1	0

Primer	Band (bp)	Glase	Nychaki	Bonnet	Carolina	Medium-grain (paddy)	Long-grain (paddy)	Carolina (paddy)
UBC-811 GAGAGAGAGAGAGAGAC	366	1	0	1	1	0	0	1
	406	0	0	1	0	0	0	0
	532	1	1	1	1	0	1	1
	662	1	0	1	1	0	0	1
	750	0	1	1	0	0	1	0
	835	1	0	0	1	1	0	1
	1000	0	1	0	1	0	1	1
	1077	1	0	1	0	0	0	0
	1294	0	0	0	1	0	0	1
	1847	1	1	0	1	1	1	1
UBC-814 CTCTCTCTCTCTCTCTA	630	1	1	1	1	1	1	0
	866	0	0	0	0	1	1	1
	1117	1	1	0	1	1	1	0
	1343	1	1	0	1	1	1	0
	1534	0	0	0	1	1	1	1
	1568	1	1	1	0	0	0	0
	2057	1	1	0	1	1	1	1
UBC-816 CACACACACACACACAT	606	0	0	1	0	0	0	0
	668	1	0	1	1	1	0	1
	792	0	1	1	0	0	0	0
	866	1	1	0	1	1	0	0
	982	0	0	1	0	0	0	0
	1019	0	0	0	0	0	1	0
	1123	1	1	0	1	1	0	0
	1237	0	0	1	0	1	1	1
	1261	0	1	0	0	0	0	0
	1389	1	1	0	1	0	0	0
	1471	0	0	1	0	0	0	0
	1639	0	0	0	0	1	1	1
	1791	1	1	1	0	0	0	0
	1872	1	1	1	1	0	0	0
	2076	1	1	1	0	0	0	0
	3208	1	1	0	1	0	0	0
	4481	1	0	0	1	0	0	0

Primer	Band (bp)	Glase	Nychaki	Bonnet	Carolina	Medium-grain (paddy)	Long-grain (paddy)	Carolina (paddy)
UBC-823 TCTCTCTCTCTCTCTCC	308	0	0	1	0	0	0	0
	420	0	0	1	0	0	0	0
	467	0	0	0	0	1	1	1
	517	1	1	0	0	0	0	0
	535	1	1	1	1	1	1	1
	633	1	1	0	1	1	1	1
	655	0	0	1	0	0	0	0
	777	1	1	0	1	1	1	1
	835	0	0	1	0	0	0	0
	965	1	1	0	1	1	1	1
	1077	0	0	1	0	0	0	0
	1393	0	0	0	0	1	1	0
	1612	1	1	1	1	1	1	0
	2169	0	0	1	0	0	0	0
	2352	1	1	0	1	1	1	0
	3650	1	1	0	1	1	1	1
UBC-827 ACACACACACACACACG	781	0	0	1	0	0	0	0
	848	1	1	1	0	1	1	1
	940	0	1	1	1	0	1	1
	1063	0	0	1	0	0	0	1
	1302	1	1	1	1	1	1	1
	1581	0	0	1	0	1	1	1
	1710	0	0	1	0	0	0	1
	2083	1	1	1	1	1	1	1
	2449	1	1	1	1	1	1	1
	3175	0	0	0	0	0	0	1
	3361	1	1	1	1	1	1	1
UBC-834 AGAGAGAGAGAGAGAGYT	325	0	0	1	0	0	0	0
	465	0	0	1	0	0	0	0
	565	1	1	1	1	1	1	1
	625	1	1	1	1	1	1	1
	750	0	0	1	0	0	0	0
	1024	1	1	1	1	1	1	1
	1300	0	0	0	0	1	0	1
	1500	1	1	0	1	1	1	1
	2289	0	0	0	0	0	0	1

Primer	Band (bp)	Glase	Nychaki	Bonnet	Carolina	Medium-grain (paddy)	Long-grain (paddy)	Carolina (paddy)
UBC-860 TGTGTGTGTGTGTGTGRA	511	1	1		1	1	1	0
	750	1	0		1	1	1	0
	915	1	1		1	1	1	0
	1026	0	0		0	0	0	1
	1079	1	1		1	0	1	0
	1135	0	0		0	1	0	0
	1256	1	1		1	1	1	1
	1390	1	1		1	0	1	1
	1599	0	1		0	1	1	0
	1760	1	0		1	0	0	1
	2577	1	1		1	1	1	1
UBC-881 GGGTGGGGTGGGGTG	737	1	1	1	1	1	1	1
	876	1	1	1	1	1	1	1
	1089	1	0	0	1	1	0	1
	1348	1	1	1	1	1	1	1
	1710	1	1	0	1	1	1	1
	2000	1	1	1	1	1	1	1
	2589	1	1	0	1	1	1	1

Dark cell = band present (1); white cell = band absent (0); grey cell = no data.