Molecular characterisation of potato cultivars using SSR and ISSR markers

Solanum tuberosum L. – SSR genotypes and ISSR band profiles

1. Dataset description

Six potato (*Solanum tuberosum* L.) cultivars (Agria, Fabula, Liseta, Marfona, Mondial and Spunda) were analysed with two types of molecular markers: 10 microsatellite (simple sequence repeat, SSR) loci and 10 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.

Species	*Solanum tuberosum* L.
Cultivars	Agria, Fabula, Liseta, Marfona, Mondial and Spunda
SSR markers	10 STM loci
ISSR markers	10 UBC primers; 110 scored bands (101 polymorphic, 91.8%)

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)	Samples with missing data
STM1017	IX	(ATT)5	GACACGTTCACCATAAA	AGAAGAATAGCAAAGCAA	1	129	0
STM1024	VIII	(TTG)6	ATACAGGACCTTAATTTCCCCAA	TCAAAACCCAATTCAATCAAATC	3	145–154	0
STM1031	V	(AT)13	TGTGTTTGTTTTTCTGTAT	AATTCTATCCTCATCTCTA	1	264	0
STM1041	V	(GAA)5	GTTGAGTAGAAGGAGGATT	CCTTTGTCTTCTGCTTTTG	2	96–99	1
STM1049	I	(ATA)6	CTACCAGTTTGTTGATTGTGGTG	AGGGACTTTAATTTGTTGGACG	2	182–188	0
STM1016	VIII	(TCT)n	TTCTGATTTCATGCATGTTTCC	ATGCTTGCCATGTGATGTGT	3	246–258	0
STM1058	III	(ATT)5	ACAATTTAATTCAAGAAGCTAGG	CCAAATTTGTATACTTCAATATGA	2	114–117	0
STM1072	II	(TG)4 (TA)6	CATTACCTCCATTGCTA	GTCTCGTACTTCTTCAT	0	NA	6
STM1106	X	(ATT)13	TCCAGCTGATTGGTTAGGTTG	ATGCGAATCTACTCGTCATGG	2	153–156	0
STM1003	VII	(TA)10	CACTTAATATGGAATAGAGGAAGTA	GAACTTATGCTTTATCATTCA	3	165–173	0

Table 2. SSR genotypes: allele sizes (bp) of the six potato cultivars

Locus	Agria	Fabula	Liseta	Marfona	Mondial	Spunda
STM1017	129	129	129	129/–	129	129
STM1024	145/154	145/148	145/148	145	145/148	145/148
STM1031	264	264	264	264	264	264
STM1041	–	96/99	96/99	96/99	96/99	96/99
STM1049	182	182/188	182/188	182/188	182/188	182/188
STM1016	246/258	258	258	258	252/258	258
STM1058	114	114	114/117	114/117	114/117	114/117
STM1072	–	–	–	–	–	–
STM1106	153/156	153/156	156	153/156	153/156	153/156
STM1003	165	167/173	165/167	165/167	167/173	165/173

One value = one allele detected; two values (e.g. 145/148) = two alleles. – = no amplification; 129/– = only one allele scored. Potato is autotetraploid; the alleles detected at each locus are reported.

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	12	10	83.3	681–2454
UBC-808	AGAGAGAGAGAGAGAGC	15	13	86.7	369–1919
UBC-811	GAGAGAGAGAGAGAGAC	14	12	85.7	250–2437
UBC-814	CTCTCTCTCTCTCTCTA	3	3	100.0	766–1872
UBC-816	CACACACACACACACAT	9	8	88.9	572–2076
UBC-823	TCTCTCTCTCTCTCTCC	11	11	100.0	931–5404
UBC-827	ACACACACACACACACG	17	17	100.0	600–3557
UBC-834	AGAGAGAGAGAGAGAGYT	8	7	87.5	310–1100
UBC-860	TGTGTGTGTGTGTGTGRA	9	9	100.0	556–2577
UBC-881	GGGTGGGGTGGGGTG	12	11	91.7	612–1801
Total		**110**	**101**	**91.8**	**250–5404**

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

Primer	Band (bp)	Agria	Fabula	Liseta	Marfona	Mondial	Spunda
UBC-807 AGAGAGAGAGAGAGAGT	681	0	1	1	0	1	0
	764	1	0	1	0	1	1
	882	0	0	0	1	0	0
	931	1	1	1	0	1	1
	1041	1	1	1	1	1	1
	1302	0	0	1	0	0	1
	1355	1	0	0	1	1	0
	1470	0	1	0	0	0	0
	1603	0	0	0	0	1	1
	1791	1	0	1	0	0	0
	1831	0	1	0	0	0	0
	2454	1	1	1	1	1	1
UBC-808 AGAGAGAGAGAGAGAGC	369	1	1	1	1	1	1
	500	0	1	1	1	0	0
	538	1	0	0	0	0	0
	647	1	1	1	1	1	1
	723	0	0	0	1	0	0
	835	0	0	0	0	1	0
	1038	1	0	1	0	0	0
	1077	0	1	0	1	0	1
	1180	0	0	0	0	0	1
	1271	0	0	0	1	0	0
	1368	1	1	1	0	0	1
	1446	0	0	0	0	1	0
	1629	0	0	0	1	1	0
	1768	0	1	0	0	0	0
	1919	0	0	0	0	1	0

Primer	Band (bp)	Agria	Fabula	Liseta	Marfona	Mondial	Spunda
UBC-811 GAGAGAGAGAGAGAGAC	250	1	1	1	0	1	1
	308	0	0	0	1	0	0
	406	0	0	1	0	0	0
	451	1	1	0	1	1	1
	603	1	1	1	1	1	1
	683	0	1	1	0	0	0
	777	1	1	0	0	1	1
	931	1	0	0	0	1	1
	1000	0	0	1	0	0	0
	1202	1	1	1	1	1	1
	1446	0	0	0	0	1	1
	1500	0	1	1	1	0	0
	1979	0	0	1	0	0	0
	2437	1	0	0	1	0	0
UBC-814 CTCTCTCTCTCTCTCTA	766	0	0	0	0	0	1
	1000	1	0	0	0	1	0
	1872	1	1	1	1	1	0
UBC-816 CACACACACACACACAT	572	1	0	0	0	0	0
	584	0	0	1	0	1	1
	595	0	1	0	1	0	0
	736	1	1	1	1	1	1
	1237	1	0	1	0	0	1
	1285	0	1	0	1	1	0
	1639	0	0	0	1	0	0
	2000	1	0	1	0	0	1
	2076	0	0	0	0	1	0
UBC-823 TCTCTCTCTCTCTCTCC	931	1	0	0	0	0	0
	1038	0	0	1	0	0	0
	1117	0	1	0	1	1	1
	1294	1	0	0	0	0	0
	1612	0	0	1	0	0	1
	1732	1	0	0	1	0	0
	2169	0	0	1	0	0	0
	2551	0	0	0	0	1	1
	2766	1	0	0	0	0	0
	4441	0	1	0	0	0	1
	5404	0	0	0	1	1	0

Primer	Band (bp)	Agria	Fabula	Liseta	Marfona	Mondial	Spunda
UBC-827 ACACACACACACACACG	600	0	0	1	0	1	0
	643	1	1	0	1	0	0
	831	1	0	1	1	1	0
	1000	1	0	1	1	1	0
	1250	1	1	1	1	1	0
	1355	0	0	1	0	1	0
	1622	1	0	0	1	0	0
	1755	0	0	1	0	1	1
	1801	1	1	0	0	0	0
	1849	0	0	0	1	0	0
	2000	0	0	1	0	0	0
	2083	0	0	0	1	0	0
	2259	0	0	0	0	0	1
	2551	0	0	1	0	0	0
	2766	0	1	0	0	1	0
	2881	0	0	0	1	0	0
	3557	0	0	0	1	0	0
UBC-834 AGAGAGAGAGAGAGAGYT	310	0	1	1	1	0	0
	465	0	1	0	0	0	0
	565	0	0	1	1	0	0
	612	1	1	1	0	1	1
	651	0	1	0	0	0	0
	768	1	1	1	1	1	1
	1024	1	0	0	1	1	0
	1100	1	1	1	0	0	1
UBC-860 TGTGTGTGTGTGTGTGRA	556	1	0	0	0	0	0
	936	1	0	0	0	0	0
	1000	0	1	1	0	0	0
	1107	1	0	0	1	1	1
	1651	1	0	1	0	0	0
	1817	0	0	0	0	1	0
	2104	1	0	1	0	1	0
	2449	0	0	0	1	1	0
	2577	0	1	0	0	0	1

Primer	Band (bp)	Agria	Fabula	Liseta	Marfona	Mondial	Spunda
UBC-881 GGGTGGGGTGGGGTG	612	0	1	1	0	1	1
	720	0	0	0	1	0	0
	936	0	0	0	1	0	0
	978	0	1	0	0	0	0
	1137	1	0	1	0	1	0
	1212	0	1	0	0	0	1
	1265	1	0	0	1	0	0
	1320	0	0	0	0	1	0
	1407	0	0	0	0	0	1
	1500	1	0	0	0	1	0
	1665	1	1	1	1	0	0
	1801	1	1	1	1	1	1

Dark cell = band present (1); white cell = band absent (0). Y = C/T; R = A/G.