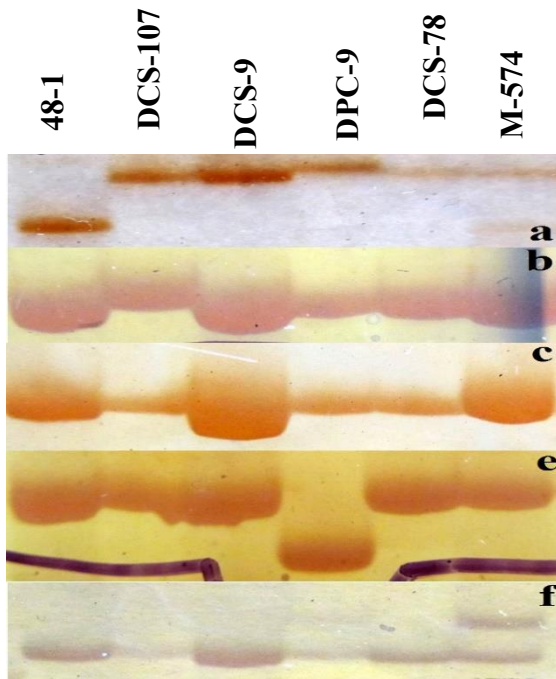


DNA fingerprinting of the castor varieties and parental lines of hybrids

Genomic DNA was isolated from varieties (48-1 and DCS-107) and the parents of Hybrids DCH-177 (DPC-9 X DCS-9) and DCH-519 (M-574XDCS-78) and screened 102 SSR markers, out of which 56 microsatellite markers (54.9 %) are polymorphic (Table 1, 2, 3). A total of 132 alleles were amplified and number of alleles per locus ranged from 2 to 5 with an average of 3 and 16 loci amplified highest number of alleles (≥ 3). Thirteen unique alleles (12.7 %) were observed for the five parental lines 48-1, DCS-107, DCS-9, DPC-9 and M-574 parental lines and for DCS-78, no unique allele was observed (Figure 1). The major allele frequency ranged from 0.33 to 0.83 with an average of 0.60 and the average PIC value of each locus was 0.43, with the highest of 0.67. Assessed the hybrid of castor hybrids DCH 177, DCH519 with polymorphic markers (Table 4, 5)



Unique alleles indentified for castor parental lines using SSR primer. a) mRcDOR-24, b) RCM-13315, c) mRcDOR-151, e) RCM-13405, f) RCM-12532

Table 1. List of castor varieties and parents of hybrids used for DNA fingerprinting

S.No	Genotype	Pedigree	Morphological characters
1	48-1	HO x MD	Red, double bloom, non-spiny, normal plant type
2	DCS-107	DCH-177 x JI-133	Green, spiny, double bloom, normal plant type

3	DCS-9	240x Bhagya	Red, spiny, double bloom, normal plant type
4	DPC-9	VP-1 x 128-1 (Bhagya x CO-1)	Green, spiny, zero bloom, pistillate line, normal plant type
5	DCH-177 (H)	DPC-9 x DCS-9	Hybrid
6	DCS78	Male version of DPC-11	Green, spiny, double bloom, normal plant type
7	M-574	Mutant from VP- 1	Green, spiny, triple bloom, pistillate line, dwarf plant type
8	DCH-519(H)	M-574x DCS-78	Hybrid

Table 2: SSR analysis of varieties and parents of hybrids

S.No.	Primer	Observed size (bp)	No. of Alleles	Major allele frequency	PIC
1.	mRcDOR-3	200	2	0.67	0.35
2.	mRcDOR-7	315	2	0.67	0.35
3.	mRcDOR-8	150	2	0.83	0.24
4.	mRcDOR-9	160-170	2	0.50	0.38
5.	mRcDOR-11	180 –200	4	0.33	0.67
6.	mRcDOR-13	310	2	0.50	0.54
7.	mRcDOR-24	260	2	0.83	0.24
8.	mRcDOR-25	125	2	0.50	0.38
9.	mRcDOR-26	195-210	3	0.67	0.35
10.	mRcDOR-29	270-280	3	0.83	0.24
11.	mRcDOR-49	200-220	3	0.33	0.67
12.	mRcDOR-54	150	2	0.83	0.24
13.	mRcDOR-55	190	2	0.67	0.45
14.	mRcDOR-56	220-230	3	0.50	0.54
15.	mRcDOR-69	195	2	0.67	0.35
16.	mRcDOR-76	120	3	0.50	0.54
17.	mRcDOR-82	350	2	0.50	0.38
18.	mRcDOR-90	270	2	0.83	0.24
19.	mRcDOR-92	190-195	3	0.50	0.54
20.	mRcDOR-103	185-190	3	0.33	0.67
21.	mRcDOR-113	145	2	0.67	0.45
22.	mRcDOR-122	300	2	0.50	0.54
23.	mRcDOR-130	130-150	4	0.33	0.67
24.	mRcDOR-142	220	2	0.50	0.38
25.	mRcDOR-144	280	2	0.67	0.35
26.	mRcDOR-150	170-180	2	0.50	0.54

27.	mRcDOR-151	310	2	0.83	0.24
28.	mRcDOR-153	360	2	0.50	0.38
29.	mRcDOR-159	290	2	0.83	0.24
30.	mRcDOR-162	340	2	0.50	0.54
31.	mRcDOR-166	200	2	0.50	0.54
32.	mRcDOR-175	110	2	0.67	0.35
33.	mRcDOR-176	300	2	0.50	0.54
34.	mRcDOR-181	210	2	0.67	0.35
35.	mRcDOR-185	190	2	0.67	0.45
36.	mRcDOR-203	120	2	0.83	0.24
37.	mRcDOR-206	180-190	3	0.67	0.45
38.	mRcDOR-211	310	2	0.50	0.62
39.	mRcDOR-223	180	2	0.50	0.54
40.	mRcDOR-225	320-330	3	0.50	0.54
41.	mRcDOR-226	320-330	3	0.50	0.62
42.	RCM-12532	280	2	0.33	0.67
43.	RCM-12523	230-240	3	0.83	0.4
44.	RCM-12601	280-300	3	0.33	0.67
45.	RCM-12687	215	2	0.50	0.38
46.	RCM-12706	200	2	0.50	0.54
47.	RCM-12832	270	2	0.67	0.45
48.	RCM-13315	275	2	0.83	0.24
49.	RCM-13335	285-305	5	0.33	0.67
50.	RCM-13360	250	2	0.83	0.24
51.	RCM-13405	225	2	0.83	0.24
52.	RCM-13531	200	2	0.83	0.24
53.	RCM-13633	230	2	0.50	0.54
54.	RCM-13961	200	2	0.67	0.45
55.	RCM-13986	250	2	0.67	0.35
56.	RCM-13992	230-240	3	0.50	0.54
Mean			3	0.60	0.43

Table 3: Unique alleles identified for parental lines

S.No	Genotypes	No. of unique allele	Name of marker
1.	48-1	4	mRcDOR-24,29,90 and RCM13531
2.	DCS-107	3	mRcDOR-54,159 and RCM-13315
3.	DCS-9	1	mRcDOR-151
4.	DPC-9	4	mRcDOR-8,203 and RCM-13360, 13405
5.	DCS-78	0	0
6.	M-574	1	RCM-12532

Table 4: SSR primers polymorphic in parents of hybrids

Hybrids	No. of markers polymorphic	Marker name
DCH-177 (DPC-9 x DCS-9)	24	mRcDOR-3, 7, 8, 9, 29, 49, 55, 82, 92, 103, 113, 122, 130, 144, 150, 151, 153, 159, 166, 176, 203, 223, 225, 226
DCH-519 (M-574 x DCS-78)	13	mRcDOR-13, 49, 55, 69, 76, 82, 92, 113, 144, 181, 206, 225

Table 5: SSR markers used for hybrid purity assessment

Hybrids	Marker name
DCH-177 (DPC-9 x DCS-9)	mRcDOR-103, mRcDOR-166, mRcDOR-49
DCH-519 (M-574 x DCS-78)	mRcDOR-206, mRcDOR-49, mRcDOR-69