

Supplementary Material

Development of high-amylose maize (*Zea mays* L.) genotypes adapted to Indian conditions through molecular breeding

Arushi Arora^{A,B}, Deepak Bhamare^{A,B,C}, Abhijit Kumar Das^{A,*}, Shubhank Dixit^A, Sreya Venadan^{A,B,C}, Yathish K. R.^C, Ramesh Kumar^A, Dharam Paul^A, J. C. Sekhar^C, Sunil Neelam^C, Sudip Nandi^A, M. C. Kamboj^D, and Sujay Rakshit^{A,E,*}

^AICAR-Indian Institute of Maize Research (IIMR), PAU Campus, Ludhiana, India.

^BPunjab Agricultural University (PAU), Ludhiana, India.

^CWinter Nursery Centre (WNC), Indian Institute of Maize Research (IIMR), Hyderabad, India.

^DCCS HAU, RRS Uchani, Karnal, Haryana, India.

^EICAR-Indian Institute of Agricultural Biotechnology (IIAB), Ranchi, Jharkhand, India.

*Correspondence to: Sujay Rakshit ICAR-Indian Institute of Agricultural Biotechnology (IIAB), Ranchi, Jharkhand, India Email: s.rakshit@icar.gov.in Abhijit Kumar Das ICAR – Indian Institute of Maize Research (IIMR), PAU Campus, Ludhiana, India Email: das.myself@gmail.com

Supplementary Table S1: Donors and recipient parents used for introgression of high amylase trait

S. No.	Genotypes	Pedigree/Source germplasm	Development institution
1	GEMS 0067	GUAT209:13×(H99ae1×H43ae1)	Trueman State University, USA
2	HKI 1344	Sub-tropical heterotic group B	CCS-HAU, Uchani, India
3	HKI 1348-6-2	Sub-tropical heterotic group B	CCS-HAU, Uchani, India
4	HKI 1378	HKI 1344 ×HKI 1354-2	CCS-HAU, Uchani, India

Supplementary Table S2: Polymorphic SSR primers used in background recovery

Primer name	Forward sequence	Reverse sequence
bnlg 2086	CGGAACCTGCTGCAGTTAAT	GAGATGCAGGAATGGGAAAA
bnlg 615	CTTCCCTCTCCCCATCTCCTTTCCAA	GCAACCTGTCCATTCTCACCAGAGGATT
mmc 0031	AGATTCAGGCCTCGTGATGAC	CCACCGTTTTTCGCGGTTGGTT
umc 1021	AGCCTCCTGAGACCTCTCGATT	ACTTCGCCACCTTACATTCTTGA
umc 1035	CTGGCATGATCACGCTATGTATG	TAACATCAGCAGGTTTGCTCATTC
umc 1297	ATCGCCTCAACACACCTTCATATT	TGGTCACTGACTGTTTCGACTAGC
umc 1421	TGCTACGAACTGGGATACACTCAA	AGTGGTGAATGTGCCCTAGGAATA
umc 1568	AAGTCCAGCCAAGTTCATCAAAGA	ACTGTAACTAAACTGGGTGTGCC
umc 1976	TGCCGAGGCTTCTAGTAGACCAA	CGCTATATCTATCCCGCAGCAAC
umc 2025	CGCCGTAGTATTTGGTAGCAGAAG	TCTACCGCTCCTTCGTCCAGTA
umc 2229	GAGAAGGGCGGGAGGAATAAC	CGAAGAGCACGATGTTGACG
umc 2240	CGCCTTTGTAACCCAGACTCATTA	CGGATGTTGCCAAGTACATCATATC
bnlg 1261	AGAAGTGCGTATGCTACAGTGGTG	CCTAGTGGTGGAGTTCTAGGCAA
bnlg 1297	TCTCGATCGCTCCGATCTAT	GACTCAACTCCAAAAGGCGA
bnlg 1613	GGGGATGATTCCGATAGGC	GGGGATGATTCCGATAGGC
bnlg 469	AGGGTGTACAGGTCCAAGTCCAA	AATGTGGGTCGTCAGCCATCAG
dupSSR 027	CTATGTTGCCACCACATCC	ACCCTTTGTGTAACTTTTCA
mmc 0111	TACTGGGGATTAGAGCAGAAG	AATCTATGTGTGAACAGCAGC
phi 96100	AGGAGGACCCCAACTCCTG	TTGCACGAGCCATCGTAT
umc 1108	TAAAGAGAGAGGAAACAAGCTGCG	ATGATGAAGCCTCACACATACGAA
umc 1633	GTCCTTCTCTCCTTCGTGCATA	CAGAGGCTGTTGTTCCCCAC
umc 2110	CTGCGTACTCTAGGTATCCCGTGT	GGTCGGATAGGAGAATCTACAGGC
umc 2129	ACGTGGTCATCACTCACCGC	AAGGAGGAGCGTTCTCGTGG
umc 2184	CTTGGCCTACTCCAAGTTCTCG	AGTAGAGCAGCACCATCCCG
bnlg 1108	GGATTCCTTTATGACGGGGT	AGTAACAACCAAGGCATCGG

Primer name	Forward sequence	Reverse sequence
bnlg 1505	GAAAGACAAGGCGAAGTTGG	GCTTCTGAACTGGATCGGAG
bnlg 1447	GAGAGGAGAGGCTGAGCTGA	TCCTCCCACTGAATTTCCAC
umc 1174	GCTAGTAGCTCTAGTTGTCCGCGA	GCTCAAGGTTGTTTTCTGCCAGT
umc 1286	GAGGTTATTTCTCCGCAACTCGAT	ACCGGACCGGATCTTTATCTTTTA
umc 2071	ACTGATGGTGTCTTGGGTGTTTT	ATACACGCAGTTACCCGAAGGTT
umc 2256	GGTCCTAGTCGTTAATTTCTTTAGCG	GGTCAAGGACTCTTCTTCCTCCTT
umc 2258	GAATAAGACCAGACAGCACCGAAC	AAGATTGTATAAATGGCAGCCACG
umc 2260	CATTTTTGTGCCTTCCAAAGAAAC	GTTTCAGGCTGACAAGGTCAAGA
umc 2273	GGTGGCTTACATTTCTGAGTGGTT	AATGGATGCTCATGTGTTCTCTTG
umc 2275	CTCAAAGTCTCCACACTAGATGC	GTAATGCATGCACCAAGAAACAAT
phi 072	ACCGTGCATGATTAATTTCTCCAGCCTT	GACAGCGCGCAAATGGATTGAACT
bnlg 1189	CGTTACCCATTCTGCTACG	CTTGCTCGTTTCCATTCCAT
bnlg 2244	CAGGAAAACGAAAACCCAGA	CTACGCGGGTCTCATCTCAT
bnlg 2291	CCTCTCGATGTTCTGAAGCC	GTCATAACCTTGCCCTCCAA
phi 021	TTCCATTCTCGTGTCTTGGAGTGGTCCA	CTTGATCACCTTTCTGCTGTGCCA
umc 1008	TCTAGCTTGTGGTGGTGGTTGA	ACATGAGCACAAAGACTGACGC
umc 1117	AATTCTAGTCCTGGGTCGGAATC	CGTGGCCGTGGAGTCTACTACT
umc 1775	GAGGACAACGCTGCTATTCTCG	GGAACTCCGTCAAATCCCATC
umc 1940	AACAACAAATGGGATCTCCGTTAC	CCATCTGCTGAGGGCTTATCTG
phi 096	TCCACCATTTGACACTTAGGCA	GCGTAGGACGACCGTTGAA
bnlg 1006	GACCAGCGTGTTGATCCC	GGAGACCCCGACTCTCTCTC
bnlg 1225	CTAGCTCCGTGTGAGTGAGTGAGT	TTCCTTCTTTCTTTCTGTGCAAC
bnlg 1879	TGCTCTCACAAGATGGTGGA	CCACAGGATAAAATCGGCTG
bnlg 2305	CTCTGCCTGCCTTTATAAATCACC	CTCCTCTTTCCCTCCATTGTT
bnlg 565	TAAGAACGACGAACGGTAACTG	GCTCACTGCACGCCAACAC
umc 1098	ATAACTCCTGCATCTTGTGAGCAA	CACAGGATAGAACCTTCTCAGCAA

Primer name	Forward sequence	Reverse sequence
umc 1155	TCTTTTATTGTGCCCGTTGAGATT	CCTGAGGGTGATTTGTCTGTCTCT
umc 1646	GCAATTATGAACAGTTGCGTGTGT	AGTGGATCGATCGAACATGACTTT
umc 1680	TTAATAAAGGAGAGGGTGGGAACC	GGGGCTTATATGTCCCTTGAACTC
umc 1602	CGACGACGACAAGATACAAAAGTG	TTTCTTGTGGATTTGTGATGCAAT
umc 1766	ACAAGAAGGAATCGAGAGCAAATG	CTTCGGGATGGAGTCGTAGTTC
umc 2400	TTTGGTGAAAGTGAAACCAAAGGT	CTAGCTAGCTTCCTTCCTCCTCG
bnlg 1136	TAACCGGATGAGCATCTTCC	CATCAGCTTCAACGAGTTTCG
mmc 0523	AGACCCTGCTGCTAGCTAG	CCCTCTCTTCACCCCTT
phi 077	GAGAAGAGGATCAGGTTTCGTTCCA	CGCGTTGTACATCTTGCCTGCTT
phi 126	TCCTGCTTATTGCTTTCGTCAT	GAGCTTGCATATTTCTTGTGGACA
phi 299852	GATGTGGGTGCTACGAGCC	AGATCTCGGAGCTCGGCTA
umc 1014	GAAAGTCGATCGAGAGACCCTG	CCCTCTCTTCACCCCTTCCTT
umc 1083	CTTTCCTCTCTGGAGCGTGTATTG	ATATGTTGCAGAACCATCCAGGTC
umc 1413	CATACACCAAGAGTGCAGCAAGAG	GGAGGTCTGGAATTCTCCTCTGTT
umc 1656	AGTTTTGACCGCGCAAAGTTA	GTACGAGCAGGCCATTAACCC
umc 2059	GGAAAAGGAGGAACAGTGTAAGCA	AGCGTGATCAGACGTACAATGCTA
umc 2389	TACCACCGCTGTGCCTAATAATTG	GCTCCCTCCACATCAAGAACC
umc 1006	AATCGCTTACTTGTAACCCACTTG	AGTTTCCGAGCTGCTTTCTCT
bnlg 155	ACCGAGTAGCCGAGACACG	AGAGTCCTGGAGCCACATGAG
phi 057	CTCATCAGTGCCGTCGTCCAT	CAGTCGCAAGAAACCGTTGCC
umc 1066	ATGGAGCACGTCATCTCAATGG	AGCAGCAGCAACGTCTATGACACT
umc 1068	AGTCGTTTTCAAAGGCTGCTGATA	TGAGTCACCTCATTTCTTCTGGTTC
umc 1407	AGGCTTACCTCCTGAGAAGCAGTT	AGGCTTAGCATCGGTGGAGAG
umc 1583	GCCTGCTTTTTGTGTATCTTAGGCA	AAAGGGCGACTTGTTTTTGTTTTT
umc 1799	GTGATGAATAATGTCCCAATTCC	GGACAGATGTCTGGAGATTGCTTT
umc 2190	GATCCGTTGAGGTCGATCCTTT	GAGGAGTTCCTGCAGTTTCTTGAC

Primer name	Forward sequence	Reverse sequence
bnlg 1022	GTGTTGTCGATCCACTCCCT	GCAAAGATCTGTGAGGGGAC
umc 1125	TTTTACTTCTCAGCGGTAGATCGG	CGTCCGACATCTTGCTTTTCTATC
bnlg 1812	CGAGAAGACTTGCGTGAACA	TTACGTGCGTCGTCAGAAT
dupSSR14	AGCAGGTACCACAATGGAG	GTGTACATCAAGGTCCAGATTT
phi 100175	TATCTGACGAATCCCATTCCC	GTACGTAACGGACGGACGG
umc 1359	GCAGAGCCAGAATTCGACCTT	CATCGTCATCATTTCGAGCAGAG
umc 1638	AGGTGACCTCGACGTCCTACG	GAGGGGAACAAAGACTTGACGTT
umc 1913	AAACAACCTATCCATGTGGCTGACC	CGTTCAGTACAATTTGGCTCAGTG
umc 1933	CGGAAAGACATGAAGCACACTATG	CACGGAGAAAGTGGGTCTATATGC
umc 1460	GCTCAATCGTAGTAACAGCAGCAG	TCTGCACTAGAATGGCTTGGTACA
umc 2356	GAGCTGTAGCACCCCAAAAAC	CTGCTGGACTACATGGTGGACTT
bnlg 1152	CGCTACCGATTGTTGAATTG	AAAGTCGTCCGGTCAAATTG
bnlg 1209	GTCCCGGGCAGAATAATACC	TTCTCCTTGAAGTGCTCGT
bnlg 1401	CACTCGGTTTTTGGCTTAGCC	GTGTCGTCGAGTGCATGC
bnlg 1714	CAAGGGCTCTTGCTCTTGAACATA	CGACGACCTTAATTGTGTTCCCTTT
phi 028	TCTCGCTGTCCTTCGATTAGTACGG	AATGCAGGCGATGGTTCTCCGGCCT
umc 1078	AGGCACTAGCAGGCGAGAGG	GCGTAGTAACATCCATCCAACCAA
umc 1137	ATCAGTCACTCTTCTGCCTCCACT	GGCTGGATAATGTTGTAGCTGGTC
umc 1170	TGGGTGCTAAAACGTAACAACAAA	GAGGACGAAGCAGAAATCCTACC
umc 1277	TTTGAGAACGGAAGCAAGTACTCC	ACCAACCAACCACTCCCTTTTTAG
umc 1586	TAGGAGATGAGCTCGTCGGATAAG	GAGGATGAGGAGGATGGTAATGGT
umc 2345	AAAAAGAGCAGCGGAACGTG	GTCGTGCTGGCTACTCTGCTG
umc 1231	CTGTAGGGCTGAGAAAAGAGAGGG	CGACAACCTTAGGAGAACCATGGAG
bnlg 1082	AAAGATCATGGGCGTACCAG	CAGGAACCTGATGACCACCT
bnlg 1360	TCTGCTCATCCACAACCTTGC	AGAACGTGAAGCTGAGCGTT
bnlg 279	GCATGCGTACCTTCAAGCTA	TGTGTTTCATCGGCAATTTTG

Primer name	Forward sequence	Reverse sequence
umc 1115	TGGAAGGGGATATCAGGATTTAGA	TGTGATGACCATGAATGTAAGCTG
umc 1239	ATCAACACACCTTTTCGATTTCTGG	CGGTGATTAGTCGATGAAGAGTGA
umc 1506	AAAAGAAACATGTTCAGTCGAGCG	ATAAAGGTTGGCAAAACGTAGCCT
umc 1785	TTCAATCCGTAGGTCTGGTGCTAT	CAATAATTTCTTTTCGCCTTGTTTCG
umc 2122	TTGACAAGCTAGTGTGCAACTGTG	TGAAAGCCCACTGGACAAACTAAT
bnlg 1185	CGGTCCAGGCAGGTTAATTA	GACTCGAGGACACCGATTTC
umc 1152	CCGAAGATAACCAAACAATAATAGTAGG	ACTGTACGCCTCCCCTTCTC
umc 2018	TAGCCAAGCTTCTCCCTAGCTTTT	GCAGTTGGAGGAGGAGCAGAC