

Table S5. Recombination events mediated by short direct repeats in the maize plastid genome

Events	Related Events	Reaction	Plant lines	DR positions <sup>2</sup>	Short direct repeat sequences and junctions	DR length and (mismatches)
1		15001REV DUP/CIR <sup>1</sup> 50141FOR	Why1-1	14923 recombinant 50999	aattcgactcCCAACCCtTTTTTTtaga aattagataaCCAACCCtTTTTTTtaga aattagataaCCAACCCtGctgcattgt	(0) 8 bp (0)
2		15001REV DUP/CIR 50141FOR	Why1-1	14492 recombinant 50341	aggagtgagaTGACTTTCCAAAatTTTTcata aacaatatgTGATTTTCCAAAatTTTTcata aacaatatgTGATTTTCCAAAattggaaaata	(1) 12 bp (0)
3		25060REV DUP/CIR 35230FOR	Why1-2/-1	24850 recombinant 36373	tggcgaagtcACAAGGccctccactt aacaagctgtACAAGGccctccactt aacaagctgtACAAGGagctctagga	(0) 6 bp (0)
4		25060REV DUP/CIR 35230FOR	Why1-2	25015 recombinant 35708	ggggtagaatTTgttgattctc ataaaaggaaTTgttgattctc ataaaaggaaTTctatcaattt	(0) 2 bp (0)
5		25060REV DUP/CIR 35230FOR	Why1-1	24796 recombinant 35785	tttcccctcaACAAATAAAGgcttgggcta cagagcaaacACAAATAAAGgcttgggcta cagagcaaacACAAATAAAGaaacaacttt	(0) 10 bp (0)
6		25060REV DUP/CIR 35230FOR	Why1-1	24258 recombinant 35542	cccgagtaccCGGGAAAAGCagaatatttg atgctttaaaCGGGAAATAGCagaatatttg atgctttaaaCGGGAAATAGCtagttagaa	(1) 11 bp (0)
7		29971REV DUP/CIR 54971FOR	Why1-1	29627 recombinant 55252	tttctgaagAGGCGGATAagatattagg ctgcctaataAGGCGGATAagatattagg ctgcctaataAGGCGGATActtccgatcc	(0) 9 bp (0)

8		29971REV DUP/CIR 54971FOR	Why1-1	29507 recombinant 55692	attattggagTCGATAcacaactcac gtatctaacTCGATAcacaactcac gtatctaacTCGATAaaggcaggcg	(0) 6 bp (0)
9		29971REV DUP/CIR 54971FOR	Why1-1	29434 recombinant 55437	gtagatcgggTTTTTTTCATTcctcaagaac ttcctcaataTTTTTTTCATTcctcaagaac ttcctcaataTTTTTTTCATTaattactccg	(0) 11 bp (0)
10	11	29971REV DUP/CIR 54971FOR	Why1-1 Why1-2	26297 recombinant 56132	ctaaggaatcAAAAAAAAAGGAAAaattggggtt ataat <del>ttt</del> caAAAAAAAAAGGAAAaattggggtt ataat <del>ttt</del> caAAAAAAAAAGGAAtttgtcgaaa	(0) 12 bp (0)
11	10	29971REV DUP/CIR 54971FOR	WT	26691 recombinant 56131	tctaaggaatCAAAAAAaggaaaaattg acataat <del>ttt</del> CAAAAAAaggaaaaattg acataat <del>ttt</del> CAAAAAAaggaatttgt	(0) 9 bp (0)
12		40020REV DUP/CIR 45152FOR	Why1-2/-1	39662 recombinant 45567	ggccgctcgcaAGGAAAAC <del>T</del> ATAcccgaaatcc ttaatgctagAGGAAAAC <del>T</del> ATAcccgaaatcc ttaatgctagAGGAAAAC <del>G</del> ATAgctccaagaa	(0) 12 bp (1)
13		45152REV DUP/CIR 59880FOR	Why1-2	44350 recombinant 60179	tccgcaatttCCGAATCGCCCTgtagaatggc caaaaagctgCCGAATCGCCCTgtagaatggc caaaaagctgCCGAATTGGCCTat <del>tt</del> ccttgcg	(0) 12 bp (2)
14		45152REV DUP/CIR 59880FOR	Why1-1	45065 recombinant 60562	agtattcactAGAAA--ATTTCCTCCTTTCTTttttttcttc atgaaaaaaaaAGAAAGCATTGCCTCCTTTCTTttttttcttc atgaaaaaaaaAGAAAGCATTGCCTTCTTTCTTat <del>at</del> cctt <del>g</del> ta	(3) 22 bp (1)
15		45152REV DUP/CIR 59880FOR	Why1-1	44815 recombinant 60324	gattcctaaaTTTGTCCcatatcgtgg ttcgaatttgTTTTGTCCcatatcgtgg ttcgaatttgTTTTGTCCaagt <del>g</del> agata	(0) 8 bp (0)
16		45152REV DUP/CIR 59880FOR	Why1-1	45075 recombinant 61177	ttcctccttTCTTTTTTTtcttctttct aaat <del>ttt</del> gggTCTTTTTTTtcttctttct aaat <del>ttt</del> gggTCTTTTTTTgtt <del>ta</del> aaccg	(0) 9 bp (0)

17		45152REV DUP/CIR 59880FOR	Why1-2/-1	44253 recombinant 60796	cgtaatctttAAC <u>C</u> AGTTctgtgcttcaa acacatgtacAAACAGTTctgtgcttcaa acacatgtacAAAA <u>A</u> CTTCctataggaat	(1) 9 bp (2)
18		54971REV DUP/CIR 64883FOR	Why1-1	54631 recombinant 65071	ataaagatthAATTCATTTCTTCAATttgctctcct ccgaaaatccAATTCATTTCTTCAATttgctctcct ccgaaaatccAATTCATTT-TTCAATggggtagat	(0) 17 bp (1)
19		59880REV DUP/CIR 74851FOR	Why1-1	58828 recombinant 74980	caactgggtaTTCTATTCCACTTCTACTTTTTAAattaaaggg ccaattcaatTTTTATTCCACTTCTACTTTTTAAattaaaggg ccaattcaatTTTTATT <u>A</u> CACTT--ACTTTTTAttatagtatg	(1) 22 bp (3)
20		59880REV DUP/CIR 74851FOR	Why1-1	59266 recombinant 76157	tatttccggcAATTGCAATGACTTccttatttct aagaggaaaaAATTGCAATGACTTccttatttct aagaggaaaaAATTGCAATGATTTaaagcgagaa	(0) 14 bp (1)

<sup>1</sup>DUP/CIR = Illegitimate recombination event yielding a duplicated/circularized product and detected using outward-facing PCR.

<sup>2</sup> The positions of the direct repeats refer to the numbers of the nucleotides in the published Maize Chloroplast Genome Sequence (10)