

Table S1. List of primers used in the study.

Primer Name	5'-3' Sequence	Application	Product Size (bp)
TC097F TC097R	ACTTGATCTGTCATGTATGCTCA AGATGCCATTTTCCTTACCA	PCR-RE digestion assay to detect TALEN-induced mutation in protoplasts	452
ZY010F TC140R	ACGTAAGGGATGACGCACA TACCACCGGTCCATTCCCTA	Right GT junction detection	1280
TC144F TC145R	CGGTAACAAAAGGCTACTCCGT TTCAGTGACAACGTCGAGCA	Left GT junction detection	1709
TC140F TC140R	GGAAAATGGCATCTTGTTCCT TACCACCGGTCCATTCCCTA	ANT1 PCR control	1056
TC020F TC210R	GAATGTATGATCACATTATAATGAATAAACAAATG GTCCATCGATGCATCTGGAGT	One-sided event detection	3877
TC085F ZY083R2	GCGAGGAGAAACCTTATGATC CTGCGTAAGCCTCTCTAACCA	Virus circularization detection	780
TC100F TC100R	GGGATCCACCTTTTATTTTC ACAACAACATGCCCTTCTGCTAGTAAGAACTTC	T-DNA and replicon detection (REP)	957
TC080F C2R	ACCACAACACTTGTGCGGTGA CGATTGGGAAACCCATCTTTC	Southern probe amplification (ANT1)	871
TC101F TC246R	GCAGAAGGCATGTTGTTGTG GAGGGTCGTACGAATAATTCTG	Southern probe amplification (LIR)	363
NB492 TC126R	GCTACAGAGTTCTTGAAGTGGTG GATAAGGAGCTCTACATTAAAAACGTCCGCAA	pTC130/131 Vector construction	1587
TC131F TC131R	CGCGTAGTCCTCGGTACCACAACACTTGTGCGGTGA CCTTCAGTCCAACTTGTAGAGAGCCTTC	ANT1 left homology for Gibson assembly of pTC144/146/206	1011
TC132F TC132R	CAAGTTGGACTGAAGGCGGGAAACGAC ATCCTAGGATCTCATTGCCCCCGG	NOS promoter for Gibson assembly of pTC144/146/206	390
TC133F TC133R	CAATGAGATCCTAGGATGGGATTGAACA GACTCCATGCTGAATTAACGCCGAATTAA	NPTII plus 35S polyA for Gibson assembly of pTC144/146/206	1049
TC134F TC134R	TAATTCAGCATGGAGTCAAAGATTCAAA GTCAAGAGTCCCCCGTGTTC	35S promoter for Gibson assembly of pTC144/146/206	552
TC127F TC135R2	ACGGGGGACTCTTGACAGTAGTATAATATATTATCAAATTATTATGAA TGACTTGAAGTACACTCATTAAATGCAATGTTCTCCTCGTCC	ANT1 right homology for Gibson assembly of pTC144/146/206	760
TC127F TC079R	ACGGGGGACTCTTGACAGTAGTATAATATATTATCAAATTATTATGAA GGGGAAATTCGAGCTGTTAATCAAGTAGATTCCATAAGTCA	ANT1 gene amplification for pTC147 construction	1071
TC09_7_ampli_F2 TC097_ampli_R	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGGAAATGAAAGATGGGTTTCCC GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGAGATGCCATTTTCCTTACCA	Deep sequencing analysis	340
ZY010F	ACGTAAGGGATGACGCACA	Multiplex PCR for T1 progeny genotyping	861 (GT)
TC097F TC210R	ACTTGATCTGTCATGTATGCTCA GTCCATCGATGCATCTGGAGT	Multiplex PCR for T1 progeny genotyping	1072 (WT)
TC331F TC331R	ACTCCCTCTGTCCCAATTT CTCATCCAACAACCCAGTC	Off-target 1	600
TC332F TC332R	TTAGAGGTGTTCTGTGGTTCG GCCACAAATCTCATAAATTCCC	Off-target 2	735
TC333F TC333R	GATGCCATGTGTCTGAGA TGTCTTTGATCTTGTGGCC	Off-target 3	719

Table S2. List of constructs used in the study.

Construct Name	Application
pTC144	BeYDV ANT1-GT T-DNA vector with TALEN1193/1194 in the replicon
pTC146	BeYDV ANT1-GT T-DNA vector with TALEN1193/1194 outside the replicon
pTC147	35S:ANT1 expressing, non-replicating T-DNA transformation efficiency control
pTC150	BeYDV ANT1-GT T-DNA vector without the nuclease
pTC151	Non-replicating ANT1-GT T-DNA vector
pTC206	BeYDV ANT1-GT T-DNA vector without kanamycin selection
pTC208	ToLCV ANT1-GT T-DNA vector with TALEN1193/1194 in the replicon
pTC217	BeYDV ANT1-GT T-DNA vector with Cas9/gRNA1b in the replicon
pTC223	BeYDV ANT1-GT T-DNA vector with Cas9/gRNA7 in the replicon