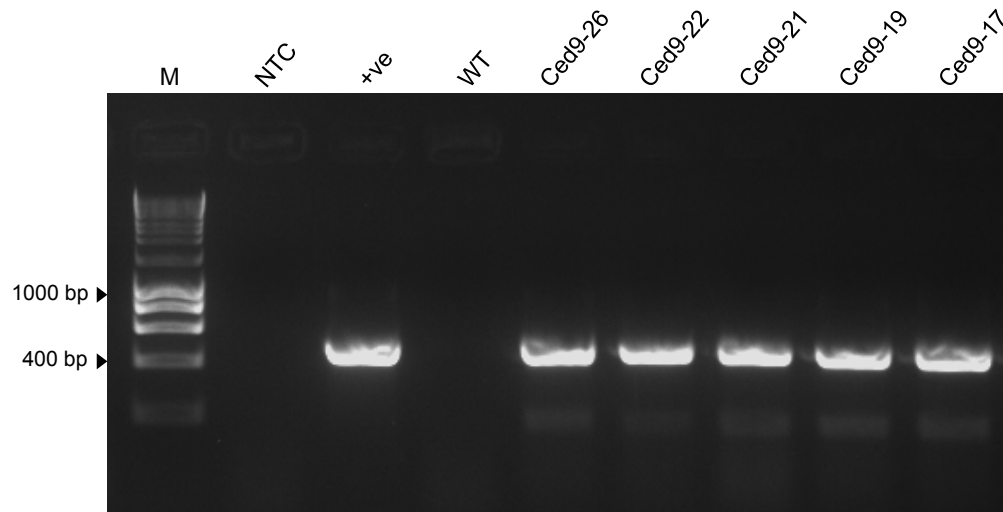
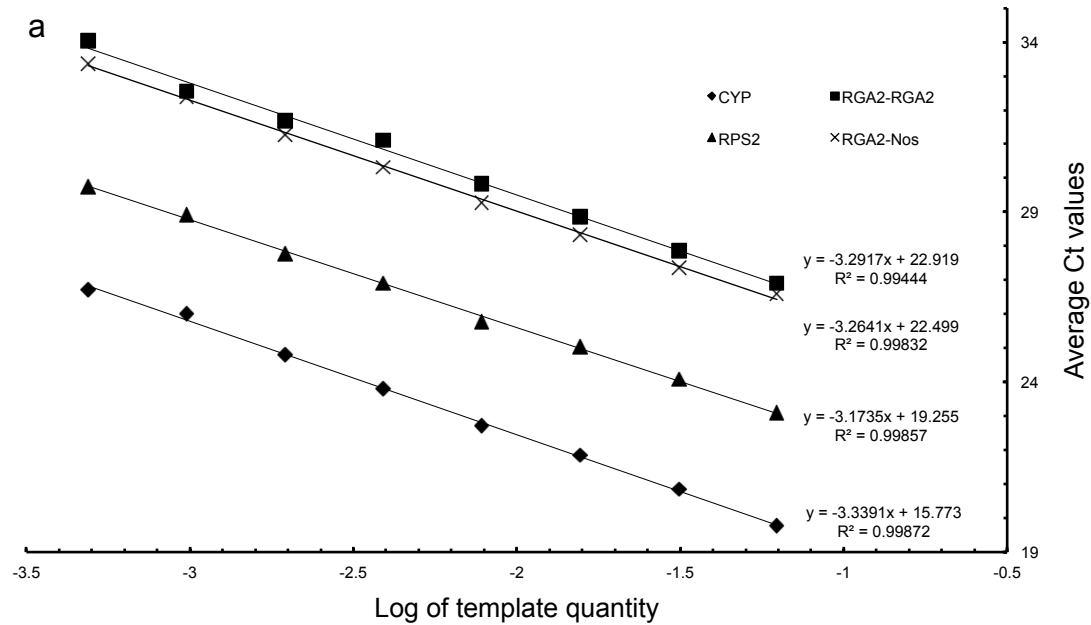




Supplementary Figure 1. Reverse transcriptase-PCR analysis of *Ced9* mRNA expression in selected lines. No-template control (NTC); plasmid DNA positive control (+ve); wild-type (WT) and DNA molecular weight marker HyperLadder I (Bioline) (M).



b

Target gene	Efficiency calculation	Efficiency (%)
<i>RGA2</i>	$1+10^{(-1/-3.2917)}$	101.3
<i>RGA2-Nos</i>	$1+10^{(-1/-3.2641)}$	102.5
<i>CYP</i>	$1+10^{(-1/-3.3391)}$	99.3
<i>RPS2</i>	$1+10^{(-1/-3.1735)}$	106.6

Supplementary Figure 2. Efficiency of primer pairs used for quantitative reverse transcriptase-PCR.

a. Dose response curve of primer pairs used to amplify each target gene.

b. Calculation of PCR efficiency for each primer pair.

Supplementary Table 1. Status of individual replicates of the transgenic lines

Transgenic line	Biological replicate	Date replicate was generated	Date field trial planted	Date field trial ended	Disease status in field trial at April 2015 (trial end)	Percent infection in field trial at April 2015 (trial end)	Date expression level measured
RGA2-2	1	Apr-04	Jan-12	Apr-15	Healthy	20%	May-16
	2				Healthy		
	3				TR4 infected		
	4				Healthy		
	5				TR4 infected		
	6				Healthy		
	7				Healthy		
	8				Healthy		
	9				Healthy		
	10				Healthy		
RGA2-3	1	Apr-04	Jan-12	Apr-15	Healthy	0%	May-16
	2				Healthy		
	3				Healthy		
	4				Healthy		
	5				Healthy		
	6				Healthy		
	7		May-12		Healthy		
	8				Healthy		
RGA2-4	1	Apr-04	Jan-12	Apr-15	Healthy	20%	May-16
	2				Healthy		
	3				Healthy		
	4				Healthy		
	5				TR4 infected		
	6				TR4 infected		
	7				Healthy		
	8				Healthy		
	9				Healthy		
	10				Healthy		
RGA2-5	1	Apr-04	Jan-12	Apr-15	Healthy	14.3%	May-16
	2				Healthy		
	3				Healthy		
	4				Healthy		
	5				Healthy		
	6				Healthy		
	7				TR4 infected		
RGA2-6	1	Apr-04	Jan-12	Apr-15	TR4 infected	66.7%	Not done
	2				TR4 infected		
	3				Healthy		
	4				TR4 infected		
	5		May-12		Healthy		
	6				TR4 infected		
RGA2-7	1	Apr-04	Jan-12	Apr-15	TR4 infected	60%	May-16
	2				TR4 infected		
	3				TR4 infected		
	4				Healthy		
	5				TR4 infected		
	6				TR4 infected		
	7				Healthy		
	8				Healthy		
	9				TR4 infected		
	10		May-12		Healthy		

Supplementary Table 1. Continued

Transgenic line	Biological replicate	Date replicate was generated	Date field trial planted	Date field trial ended	Disease status in field trial at April 2015 (trial end)	Percent infection in field trial at April 2015 (trial end)	Date expression level measured
Ced9-10	1	Sep-04	Jan-12	Apr-15	TR4 infected	37.50%	Not done
	2		Jan-12		Healthy		
	3		Jan-12		TR4 infected		
	4		Jan-12		Healthy		
	5		Jan-12		TR4 infected		
	6		Jan-12		Healthy		
	7		Jan-12		Healthy		
	8		Jan-12		Healthy		
	9		May-12		Healthy		
	10		May-12		Healthy		
Ced9-15	1	Sep-04	Jan-12	Apr-15	Healthy	50%	Not done
	2		Jan-12		TR4 infected		
	3		Jan-12		TR4 infected		
	4		Jan-12		TR4 infected		
	5		Jan-12		Healthy		
	6		Jan-12		TR4 infected		
	7		Jan-12		Healthy		
	8		Jan-12		Healthy		
	9		May-12		TR4 infected		
	10		May-12		Healthy		
Ced9-17	1	Sep-04	Jan-12	Apr-15	TR4 infected	87.5%	Not done
	2		Jan-12		TR4 infected		
	3		Jan-12		TR4 infected		
	4		Jan-12		Healthy		
	5		Jan-12		TR4 infected		
	6		Jan-12		TR4 infected		
	7		Jan-12		TR4 infected		
	8		Jan-12		TR4 infected		
	9		May-12		Healthy		
	10		May-12		TR4 infected		
Ced9-19	1	Sep-04	Jan-12	Apr-15	Healthy	10%	Not done
	2		Jan-12		TR4 infected		
	3		Jan-12		Healthy		
	4		Jan-12		Healthy		
	5		Jan-12		Healthy		
	6		Jan-12		Healthy		
	7		Jan-12		Healthy		
	8		Jan-12		Healthy		
	9		May-12		Healthy		
	10		May-12		Healthy		
Ced9-21	1	Sep-04	Jan-12	Apr-15	Healthy	0%	Not done
	2		Jan-12		Healthy		
	3		Jan-12		Healthy		
	4		Jan-12		Healthy		
	5		Jan-12		Healthy		
	6		Jan-12		Healthy		
	7		Jan-12		Healthy		
	8		Jan-12		Healthy		
	9		May-12		Healthy		
	10		May-12		Healthy		

Supplementary Table 1. Continued

Transgenic line	Biological replicate	Date replicate was generated	Date field trial planted	Date field trial ended	Disease status in field trial at April 2015 (trial end)	Percent infection in field trial at April 2015 (trial end)	Date expression level measured
Ced9-22	1	Sep-04	Jan-12	Apr-15	Healthy	30%	Not done
	2				TR4 infected		
	3				Healthy		
	4				Healthy		
	5				Healthy		
	6				Healthy		
	7		TR4 infected				
	8		TR4 infected				
	9		Healthy				
	10		Healthy				
Ced9-23	1	Sep-04	Jan-12	Apr-15	Healthy	20%	Not done
	2		May-12		Healthy		
	3				Healthy		
	4				TR4 infected		
	5				Healthy		
	6				Healthy		
	7				Healthy		
	8				Healthy		
	9				Healthy		
	10				TR4 infected		
Ced9-26	1	Sep-04	Jan-12	Apr-15	Healthy	20%	Not done
	2				Healthy		
	3				Healthy		
	4				Healthy		
	5				Healthy		
	6		TR4 infected				
	7		TR4 infected				
	8		May-12		Healthy		
	9				Healthy		
	10				Healthy		
Ced9-31	1	Sep-04	Jan-12	Apr-15	Healthy	20%	Not done
	2		May-12		TR4 infected		
	3				Healthy		
	4				Healthy		
	5				Healthy		
	6				Healthy		
	7				Healthy		
	8				Healthy		
	9				TR4 infected		
	10				Healthy		

Supplementary Table 2. Assessment of bunch size of individual replicates within transgenic lines and Grand Nain controls

Line	Number of hands per bunch		
	< 6	6-8	> 8
Grand Nain (n=6)		5	1
RGA2-2 (n=3)		3	
RGA2-3 (n=5)	1	2	2
RGA2-4 (n=4)		4	
RGA2-5 (n=6)		4	2
RGA2-6 (n=2)		1	1
RGA2-7 (n=5)		2	3
Ced9-10 (n=6)		6	
Ced9-15 (n=5)		2	3
Ced9-17 (n=3)		3	
Ced9-19 (n=2)		2	
Ced9-21 (n=2)	1	2	
Ced9-22 (n=4)	1	3	1
Ced9-23 (n=2)		2	
Ced9-26 (n=6)		3	3
Ced9-31 (n=2)		1	1

Supplementary Table 3. Sequences of primers used in this study

Target sequence	Primers	Sequence (5' → 3')	Purpose	Amplicon length (bp)
<i>CYP</i>	qCYP-F1	TGTCTTAGGAGGATGTAGAGGAGC	PCR, RT-PCR and qRT-PCR	182
	qCYP-R1	GGCTCCTGCTGACGATAATGAC		
<i>RPS2</i>	qRPS2-F	ACTCAACCGTCTTCCCAAAG	qRT-PCR	110
	qRPS2-R	TCACAATATCAGGCAATCCCG		
<i>RGA2</i>	qRGA2nat-F	GAACAGGTGACGACGGCTTG	qRT-PCR	92
	qRGA2nat-R	AAACTGGAGGAAGGTGAGGTGT		
<i>RGA2</i>	RGA2gene seq2	ATGATGTGTGGAACGAAGACCC	PCR probe generation	486
	RGA2gene seq4	CCTTTCGAAACCTGTAGCCC		
<i>RGA2-Nos</i>	qRGA2trans-F	GTCGCTGTAGCACCACT	qRT-PCR	96
	qNOS-R5	AAGACCGGCAACAGGATTC		
<i>Ced9</i>	Ced-9F2	GATGGCGACTGGCGAGATGAAG	RT-PCR	484
	Ced-9R2	GAAACCGCCGAACGAGATTAGACC		
<i>Ced9</i>	CED9 AsiSI fwd	GCGCGATCGCATGGCGACACGCTGCACG	PCR probe generation	862
	CED9 SbfI rev	GCCCTGCAGGTTACTTCAAGCTGAACATCATCC		