Table 14: Primer sequences and amplicon length in PCR-assays to detect GMOs

Target sequence	Primer 1 (5' => 3') Primer 2 (5' => 3')	Amplicon length (bp)	Application (ID)	Cycling parameter	Ref.
I.) Across interfaces					
Structural gene / regulatory sequence					
antisense PG P-35S	AGGGGAAAGTGGAAAACCATC CCACTGACGTAAGGGATGACG	427	Tomato (1)	x	12
antisense PG P-35S	TTTGGAGCTAAGGGTGATGGA AGTTCATTTCATTTGGAGAGGACA	472	Tomato (12)		17
sense PG P-35S	GAAGATCTGCATGGACCTGAAAA AGTTCATTTCATTTGGAGAGGACA	478	Tomato (12)		17
nptII P-nos	GAACTCGTCAAGAAGGCGATA GTTCAAATGCGCCTAAGGTCA	943	Tomato (12)	x	17
gene IIIA nos 3'	CTACTGATTACGGTGCTGCTA TGAATCCTGTTGCCGGTCTTG	658	Tomato (12)	x	17
P-35S PVX cp	CCACTGACGTAAGGGATGACG CCAGTTCCATACCACTGGAGC	502	Potato	x	5
P-35S CTP (of CP4 epsps)	TGATGTGATATCTCCACTGACG TGTATCCCTTGAGCCATGTTGT	172	Soybean (8)	x	24
P-35S dhfr	ATCATTGCGATAAAGGAAAGGC CTGCCTCCGACTATCCAAACCA	540	Corn	x	4
P-35S dhfr	ATCATTGCGATAAAGGAAAGGC AAAGCCACAAAAGTCCCAT	840	Corn	x	4
CP4 epsps nos 3'	nda nda	213/314	Soybean (8)	x	13
Regulatory sequence / regulatory sequence					
P-35S nos 3'	CAATCCCACTATCCTTCGC CATCGCAAGACCGGCAACAG	890	Tomato (12)	x	17
Structural gene / structural gene					
cat lacZ	TTTGTATTCTGAGCATAGTGA ATAGCGACGAGAGTTAG	623	Microorganism	x	10
kat A cat	CAGCGACTTGAGAAAAACGAGTG TGTCAGATAGGCCTAATGACTG	1321	Microorganism	x	9, 20
nptII ocd	TATCGCCTTCTTGACGAGTTC CTGTGGCGGGAACTCCACGA	401	Tomato (12)	x	17
ocd gene IIIA	CGATCCTGAGCGACAATATGA TAGCAGCACCGTAATCAGTAG	660	Tomato (12)	x	17
PVY-cp nptII	nda nda	ca. 1800*	Potato§	x *	22
II.) Within single structural genes					
als	CAGGTCAAGTGGCACGTAGGATG GGCTGCTTGTTCTTTCCAATCT	642	Cotton		14
aphIV (hygromycin- phosphotransferase)	CGCCGATGGTTTCTACAA GGCGTCGGTTTCCACTAT	839	Potato	x	8, 20
barnase	CTGGGTGGCATCAAAAGGGAACC TCCGGTCTGAATTTCTGAAGCCTG	160	Corn (21)	x	16
barstar	TCAGAAGTATCAGCGACCTCCACC AAGTATGATGGTGATGTCGCAGCC	235	Corn (21)	x	16
gus	TCCGTAGAAACCCAACC GCTAGCCTTGTCCATTG	674	Papaya (26?)	x	25
gus	ACGTCCTGTAGAAACCCCAA CCCGCTTCGAAACCAATGCC	1097	Alfalfa	x	1

nptII	GAACAAGATGGATTGCACGC GAAGAACTCGTCAAGAAGGC	785	Alfalfa	x	1
nptII	nda nda	506	Tom.paste (51, 54)	x	11
nptII	GGATCTCCTGTCATCT GATCATCCTGATCGAC	173	Tom (1), Pot, SuB	x	12,18
nptII	nda nda	512	Tomato (1)	x	19
nptII	GGTGCCCTGAATGAACTG TAGCCAACGCTATGTCCT	ca. 500	Microorganism§	x	21
nptII	CTCGACGTTGTCACTGAAGCGGGAAG AAAGCACGAGGAAGCGGTCAGCCCAT	489b	Microorganism§	x	23
nptII	CCGACCTGTCCGGTGCCC CCGCCACACCCAGCCGGCC	475	Soybean (8)	x	15
pat (synthetic?)	nda nda	nda	Rapeseed§ (66?)		3
pat (synthetic?)	nda nda	552	Corn (15?)		19
pat (synthetic)	nda nda	nda	Rapeseed§ (66?)		2
pat (synthetic)	nda nda	532	Corn/Rapeseed§		6
PG (polygalacturonase)	CGTTGGTGCATCCCTGCATGG GGATCCTTAGAAGCATCTAGT	180 (380)a	Tomato (12)		17
PG (polygalacturonase)	nda nda	427	Tomato (12)		19
II.) Within single regulatory sequences					
P-35S	GCTCCTACAAATGCCATCA	195 or 390 195	Tom (1), Soy (8), Corn, SuB, Potato	x	18,19
P-35S	nda nda	nda	Rapeseed§ (66?)		3
P-TA29	CTTTTTGGTTAGCGAATGC CTACCATGGTAGCTAATTTC	880	Tobacco	x	7
T-nos (= nos 3')	GAATCCTGTTGCCGGTCTTG TTATCCTAGTTTGCGCGCTA	180	Soybean (8), Pot.	x	18

Tom, Tomato; Pot, Potato; SuB, sugarbeet.
* cycling parameters had to be adjusted to the unusual amplicon size.
a) use of these primers resulted in a 380 bp amplicon in control lines, and an additional 180 bp product in transgenic lines (no intron).
b) This amplicon was the result of the second set of primers in a nested PCR; the size of the first product was 753 bp.
§ DNA was extracted from the soil (degraded plant material, or microorganisms).
x Cycling parameter described

References: 1, Blake et al. (1991); 2, Ernst et al. (1996); 3, Feldmann et al. (1996); 4, Golovkin et al. (1993); 5, Jongedijk et al. (1992); 6, Kirchhof et al. (1996); 7, Kriete et al. (1996); 8, LMBG-Methodensammlung (1996); 9, LMBG-Methodensammlung (in press); 10, LMBG-Methodensammlung (in preparation); 11, Meyer, G.; Hanse Analytik, Bremen (personal communication); 12, Meyer (1995a); 13, Padgette et al. (1995); 14, Petition from DuPont for genetically modified cotton (1995); 15, Petition from Monsanto for herbicide-tolerant soybean (1993); 16, Petition from PGS for SeedLink® corn (1995); 17, Petition from Zeneca for genetically modified tomatoes (1995); 18, Pietsch et al. (1997); 19, Pietsch and Waiblinger, (1996); 20, Schulze et al. (1996); 21, Smalla et al. (1993); 22, Stax et al. (1994); 23, Tsushima et al. (1995); 24, Wurz and Willmund, (1997); 25, Yang et al. (1996)