

(86) **Date de dépôt PCT/PCT Filing Date:** 2010/11/23
(87) **Date publication PCT/PCT Publication Date:** 2011/05/26
(45) **Date de délivrance/Issue Date:** 2020/06/02
(85) **Entrée phase nationale/National Entry:** 2012/05/22
(86) **N° demande PCT/PCT Application No.:** US 2010/057886
(87) **N° publication PCT/PCT Publication No.:** 2011/063413
(30) **Priorités/Priorities:** 2009/11/23 (US61/263,707);
2009/11/23 (EP09014565.7); 2010/07/23 (US61/367,251)

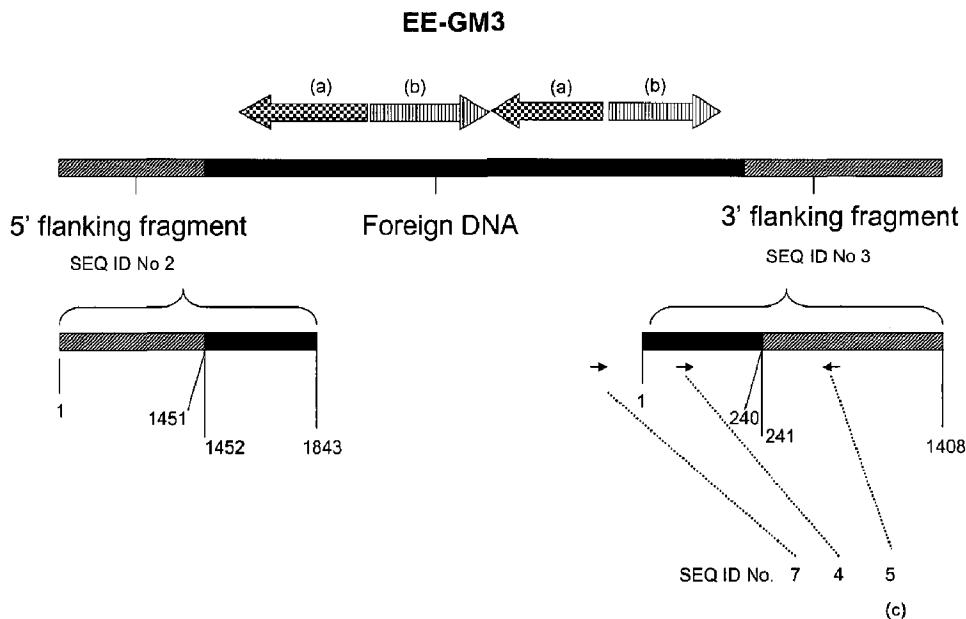
(51) **CI.Int./Int.Cl. C12N 15/11** (2006.01),
C07H 21/00 (2006.01), **C12N 15/00** (2006.01),
C12N 5/04 (2006.01), **C12N 5/10** (2006.01),
C40B 40/06 (2006.01) **C12N 15/82** (2006.01)

(72) **Inventeurs/Inventors:**
MASON, JUSTIN THOMAS, US;
LETTOW, LESLIE JAMES, US;
EBY, MARK ALAN, US;
EBY, WILLIAM H., US;

(73) **Propriétaires/Owners:**
BAYER CROPSCIENCE N.V., BE;
MS TECHNOLOGIES LLC, US

(74) **Agent:** SMART & BIGGAR LLP

(54) Titre : PLANTES DE SOJA TOLERANT UN HERBICIDE ET LEURS PROCEDES D'IDENTIFICATION
(54) Title: HERBICIDE TOLERANT SOYBEAN PLANTS AND METHODS FOR IDENTIFYING SAME



(57) Abrégé/Abstract:

(37) **Abstract:** The invention provides specific transgenic soybean plants, plant material and seeds, characterized in that these products harbor a stack of specific transformation events at specific locations in the soybean genome. Tools are also provided which allow rapid and

(72) **Inventeurs(suite)/Inventors(continued):** WELZ, GUENTER, DE; VERHAEGHE, STEVEN, BE;
DE BEUCKELEER, MARC, BE; HABEX, VEERLE, BE; FERRULO, JEAN-MARC, FR

(57) **Abrégé(suite)/Abstract(continued):**

unequivocal identification of these events in biological samples.

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization

International Bureau

(43) International Publication Date
26 May 2011 (26.05.2011)(10) International Publication Number
WO 2011/063413 A3

(51) International Patent Classification:

C12Q 1/68 (2006.01) *A01H 5/00* (2006.01)
C12N 5/14 (2006.01)(DE). **VERHAEGHE, Steven** [BE/BE]; Harrelstraat 21, BE-9800 Grammene-Deize (BE). **DE BEUCKELEER, Marc** [BE/BE]; Hofakkerstraat 54, BE-9052 Zwijnaarde (BE). **HABEX, Veerle** [BE/BE]; Hoge Voetweg 12, BE-8560 Gullegem (BE). **FERULLO, Jean-Marc** [FR/FR]; 8, rue des cerisiers, FR-59560 Comines (FR).

(21) International Application Number:

PCT/US2010/057886

(74) Agents: **SCHULMAN, Robert, M.** et al.; Hunton & Williams, Intellectual Property Department, 1900 K Street, N.W., Washington, DC 20006 (US).

(22) International Filing Date:

23 November 2010 (23.11.2010)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/263,707 23 November 2009 (23.11.2009) US
09014565.7 23 November 2009 (23.11.2009) EP
61/367,251 23 July 2010 (23.07.2010) US

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(71) Applicants (for all designated States except US): **BAYER BIOSCIENCE N.V.** [BE/BE]; Technologiepark 38, B-9052 Gent (BE). **MS TECHNOLOGIES LLC** [US/US]; 103 Avenue D, West Point, Iowa 52656 (US).

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK,

(72) Inventors; and

(75) Inventors/Applicants (for US only): **MASON, Justin, Thomas** [US/US]; 2417 White Oak Lane, Granger, Iowa 50109 (US). **LETTOW, Leslie, James** [US/US]; 1682 250th Street, Guthrie Center, Iowa 50115 (US). **EBY, Mark, Alan** [US/US]; 23374 Laredo Trail, Adel, Iowa 50003 (US). **EBY, William, H.** [US/US]; 4763 Panorama Drive, Panora, Iowa 50216 (US). **WELZ, Günter** [DE/DE]; Vor den Garten 8, DE-38302 Wolfenbuttel*[Continued on next page]*

(54) Title: HERBICIDE TOLERANT SOYBEAN PLANTS AND METHODS FOR IDENTIFYING SAME

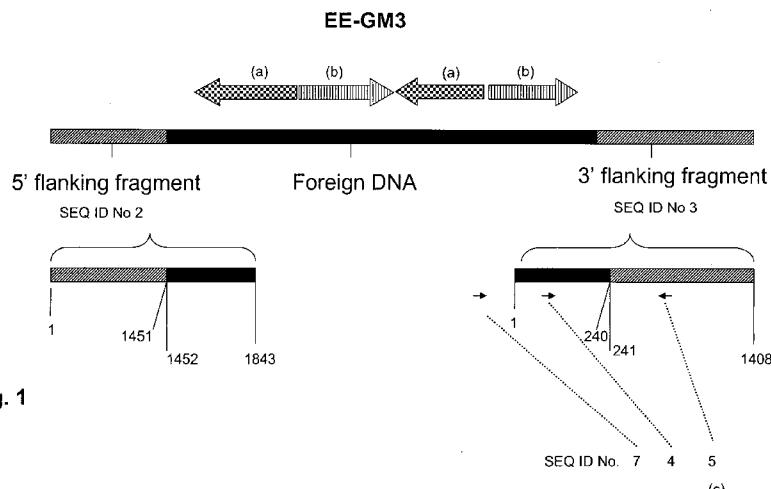


Fig. 1

(57) Abstract: The invention provides specific transgenic soybean plants, plant material and seeds, characterized in that these products harbor a stack of specific transformation events at specific locations in the soybean genome. Tools are also provided which allow rapid and unequivocal identification of these events in biological samples.

WO 2011/063413 A3



SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, — *with sequence listing part of description (Rule 5.2(a))*
GW, ML, MR, NE, SN, TD, TG).

Published:

- *with international search report (Art. 21(3))*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(88) Date of publication of the international search report:
18 August 2011

81722251

Herbicide Tolerant Soybean Plants and Methods for Identifying Same

Cross-Reference to Related Applications

5 This application claims priority to U.S. Provisional Patent Application No. 61/367,251, filed July 23, 2010; U.S. Provisional Patent Application No. 61/263,707, filed November 23, 2009; and European Patent Application No. EP 09014565.7, filed November 23, 2009.

10 Field of the Invention

This invention relates to transgenic soybean plants, plant material and seeds, characterized by harboring at least two specific transformation events, particularly by the presence of at least two sets of genes encoding proteins that confer herbicide tolerance, each at a specific location in the 15 soybean genome. The soybean plants of the invention combine the herbicide tolerance phenotype with an agronomic performance, genetic stability and functionality in different genetic backgrounds equivalent to the non-transformed soybean line in the absence of herbicide(s). This invention further provides methods and kits for identifying the presence of plant material comprising specifically transformation event EE-GM3 and EE-GM2 or EE-GM1 in biological 20 samples.

Background of the Invention

The phenotypic expression of a transgene in a plant is determined both by the structure of the 25 gene or genes itself and by its or their location in the plant genome. At the same time the presence of the transgenes or "foreign DNA" at different locations in the genome will influence the overall phenotype of the plant in different ways. The agronomically or industrially successful introduction of a commercially interesting trait in a plant by genetic manipulation can be a lengthy procedure dependent on different factors. The actual transformation and regeneration of 30 genetically transformed plants are only the first in a series of selection steps, which include

81722251

extensive genetic characterization, breeding, and evaluation in field trials, eventually leading to the selection of an elite event.

The unequivocal identification of an elite event is becoming increasingly important in view of 5 discussions on Novel Food/Feed, segregation of GMO and non-GMO products and the identification of proprietary material. Ideally, such identification method is both quick and simple, without the need for an extensive laboratory set-up. Furthermore, the method should provide results that allow unequivocal determination of the elite event without expert interpretation, but which hold up under expert scrutiny if necessary. Specific tools for use in the 10 identification of elite event EE-GM3 and EE-GM1 or EE-GM2 in biological samples are described herein.

In this invention, EE-GM3 has been identified as an elite event from a population of transgenic soybean plants in the development of herbicide tolerant soybean (*Glycine max*) comprising a 15 gene coding for glyphosate tolerance combined with a gene conferring tolerance to 4- hydroxy phenylpyruvate dioxygenase (HPPD) inhibitors, each under control of a plant-expressible promoter.

EE-GM1 and EE-GM2 have previously been identified as elite events from a population of 20 transgenic soybean plants in the development of herbicide tolerant soybean (*Glycine max*) comprising a gene coding for glufosinate tolerance under control of a plant-expressible promoter and are described in WO2006/108674 and WO2006/108675.

25 Soybean plants comprising a herbicide tolerance gene have been disclosed in the art. However, none of the prior art disclosures teach or suggest the present invention.

It is known in the art that getting a commercial herbicide tolerant elite transformation event in 30 soybean plants with acceptable agronomic performance, with no yield drag, and providing sufficient herbicide tolerance, certainly to 3 different classes of herbicides, is by no means straightforward.

Indeed, it has been reported that the first soybean event (event 40-3-2) released on the market with herbicide tolerance, had a significant yield drag compared to (near-)isogenic lines (Elmore et al. (2001) *Agron. J.* 93:408–412).

5

Also, Optimum™ GAT™ soybeans (event 356043) were developed to combine tolerance to glyphosate with tolerance to ALS herbicides, but it has been reported that these soybeans were not meeting the standards for glyphosate tolerance by itself (without combination with another glyphosate tolerance soybean event (such as event 40-3-2)

10 (see, e.g., www.bloomberg.com/apps/news?pid=newsarchive&sid=ad4L0hH9MKWE)).

Summary of the Preferred Embodiments of the Invention

The present invention relates to a transgenic soybean plant, or seed, cells or tissues thereof, comprising, stably integrated into its genome, an expression cassette which comprises a herbicide tolerance gene comprising the coding sequence of the 2m*EPSPS* gene and another herbicide tolerance gene comprising the coding sequence of HPPD-PF W336 (both as described in Example 1.1 herein and as represented in SEQ ID No 1) as well as a second expression cassette comprising a herbicide tolerance gene comprising the coding sequence of a phosphinothrin acetyl transferase, as described in Example 1 herein and as represented in SEQ ID No 11. The transgenic soybean plant, or seed, cells or tissues thereof are tolerant to herbicides based on glyphosate, based on glufosinate, and an HPPD inhibitor herbicide such as isoxaflutole, and, in the absence of herbicide(s), has an agronomic performance which is substantially equivalent to the non-transgenic isogenic line. After application of one or more herbicides to which tolerance is provided, the plant will have a superior agronomic phenotype compared to a non-transgenic plant.

According to the present invention the soybean plant or seed, cells or tissues thereof comprise elite event EE-GM3 and EE-GM1 or EE-GM3 and EE-GM2.

30

More specifically, the present invention relates to a transgenic soybean plant, seed, cells or tissues thereof, the genomic DNA of which is characterized by the fact that, when analyzed in a PCR Identification Protocol as described herein, using two primers directed to the 5' or 3' flanking region of EE-GM3 and the foreign DNA comprising herbicide tolerance genes in EE-GM-3, respectively, yields a fragment which is specific for EE-GM3 and further when analyzed in a PCR Identification Protocol as described herein, using two primers directed to the 5' or 3' flanking region of EE-GM1 or EE-GM2 and the foreign DNA comprising glufosinate tolerance genes, respectively, yields a fragment which is specific for EE-GM1 or EE-GM2. The primers for detection of EE-GM3 may be directed against the 5' flanking region within SEQ ID NO: 2 and the foreign DNA comprising herbicide tolerance genes, respectively. The primers for detection of EE-GM3 may also be directed against the 3' flanking region within SEQ ID NO: 3 and the foreign DNA comprising herbicide tolerance genes, respectively, such as the primers comprising or consisting (essentially) of the nucleotide sequence of SEQ ID NO: 5 and SEQ ID NO: 4 or SEQ ID No.: 7 respectively, and yield a DNA fragment of between 100 and 800 bp, such as a fragment of about 263 bp or about 706 bp. The primers for detection of EE-GM1 may be directed against the 5' flanking region within SEQ ID NO: 12 and the foreign DNA comprising herbicide tolerance genes, respectively. The primers for detection of EE-GM1 may also be directed against the 3' flanking region within SEQ ID NO: 13 and the foreign DNA comprising herbicide tolerance genes, respectively, such as the primers comprising or consisting (essentially) of the nucleotide sequence of SEQ ID NO: 16 and SEQ ID NO: 17 respectively, and yield a DNA fragment of between 100 and 500 bp, such as a fragment of about 183 bp. The primers for detection of EE-GM2 may be directed against the 5' flanking region within SEQ ID NO: 14 and the foreign DNA comprising herbicide tolerance genes, respectively. The primers for detection of EE-GM2 may also be directed against the 3' flanking region within SEQ ID NO: 15 and the foreign DNA comprising herbicide tolerance genes, respectively, such as the primers comprising or consisting (essentially) of the nucleotide sequence of SEQ ID NO: 18 and SEQ ID NO: 19 respectively, and yield a DNA fragment of between 100 and 500 bp, such as a fragment of about 151 bp.

30 Reference seed comprising the elite event EE-GM3 of the invention has been deposited at the NCIMB under accession number NCIMB 41659. Reference seed comprising the elite event EE-

GM1 of the invention has been deposited at the NCIMB under accession number NCIMB 41658. Reference seed comprising the elite event EE-GM2 of the invention has been deposited at the NCIMB under accession number NCIMB 41660. Reference seed comprising elite event EE-GM3 and EE-GM1 was deposited at the ATCC under accession number PTA-11041. Reference seed comprising elite event EE-GM3 and EE-GM2 was deposited at the ATCC under accession 5 number PTA-11042.

One embodiment of the invention is seed comprising elite event EE-GM3 (reference seed comprising said event being deposited as NCIMB accession number NCIMB 41659) and further 10 comprising elite event EE-GM1 (reference seed comprising said event being deposited as NCIMB accession number NCIMB 41658), or seed comprising event EE-GM3 and EE-GM1 (reference seed comprising said events being deposited at the ATCC under accession number PTA-11041) which will grow into a soybean plant tolerant to at least three herbicides, particularly tolerant to glyphosate and/or HPPD inhibitors such as isoxaflutole and/or glutamine 15 synthetase inhibitors such as glufosinate.

Another embodiment of the invention is seed comprising elite event EE-GM3 (reference seed comprising said event being deposited as NCIMB accession number NCIMB 41659) and further comprising elite event EE-GM2 (reference seed comprising said event being deposited as 20 NCIMB accession number NCIMB 41660), or seed comprising event EE-GM3 and EE-GM2 (reference seed comprising said events being deposited at the ATCC under accession number PTA-11042), which will grow into a soybean plant tolerant to at least three herbicides, particularly tolerant to glyphosate and/or HPPD inhibitors such as isoxaflutole and/or glutamine synthetase inhibitors such as glufosinate.

25 The seed of NCIMB deposit number NCIMB 41659, is a seed lot consisting of at least about 95% transgenic seeds, comprising elite event EE-GM3, which will grow into herbicide tolerant plants, whereby the plants are glyphosate and/or isoxaflutole tolerant plants. The seed or progeny seed obtainable or obtained from the deposited seed (e.g., following crossing with other soybean 30 plants with a different genetic background) can be sown and the growing plants can be treated with glyphosate or HPPD inhibitors such as isoxaflutole as described herein to obtain glyphosate

or isoxaflutole-tolerant plants, comprising elite event EE-GM3. The seed of NCIMB deposit number NCIMB 41658 and NCIMB 41660 are seed lots consisting of at least about 95% transgenic seeds, comprising elite events EE-GM1 or EE-GM2, respectively, which will grow into herbicide tolerant plants, whereby the plants are glufosinate-tolerant plants. The seed can be

5 sown and the growing plants can be treated with glufosinate as described herein to obtain glufosinate tolerant plants, comprising the elite events EE-GM1 or EE-GM2.

The seed of ATCC deposit number PTA-11041, is a seed lot consisting of at least about 95% transgenic seeds, comprising elite event EE-GM3 and elite event EE-GM1 in homozygous form, which will grow into herbicide tolerant plants, whereby the plants are glyphosate, glufosinate

10 and/or isoxaflutole tolerant plants. The seed or progeny seed obtainable or obtained from the deposited seed (e.g., following crossing with other soybean plants with a different genetic background) can be sown and the growing plants can be treated with glyphosate, glufosinate and/or HPPD inhibitors such as isoxaflutole, as described herein to obtain glyphosate, glufosinate and/or isoxaflutole-tolerant plants, comprising elite event EE-GM3 and EE-GM1.

15 The seed of ATCC deposit number PTA-11042, is a seed lot consisting of at least about 95% transgenic seeds, comprising elite event EE-GM3 and elite event EE-GM2 in homozygous form, which will grow into herbicide tolerant plants, whereby the plants are glyphosate, glufosinate and/or isoxaflutole tolerant plants. The seed or progeny seed obtainable or obtained from the deposited seed (e.g., following crossing with other soybean plants with a different genetic

20 background) can be sown and the growing plants can be treated with glyphosate, glufosinate and/or HPPD inhibitors such as isoxaflutole, as described herein to obtain glyphosate, glufosinate and/or isoxaflutole-tolerant plants, comprising elite event EE-GM3 and EE-GM2.

The invention further relates to cells, tissues, progeny, and descendants from a plant comprising

25 the elite event EE-GM3 and further comprising elite event EE-GM1, and which may be obtained by growing a plant comprising the elite event EE-GM3 and EE-GM1 deposited at ATCC as PTA-11041, or by growing a plant comprising the elite event EE-GM3 from the seed deposited at the NCIMB having accession number NCIMB 41659 and crossing said plant with a plant comprising elite event EE-GM1 grown from the seed deposited at the NCIMB having accession

30 number NCIMB 41658. The invention also relates to cells, tissues, progeny, and descendants from a plant comprising the elite event EE-GM3 and further comprising elite event EE-GM2,

and which may be obtained by growing a plant comprising the elite event EE-GM3 and EE-GM2 deposited at ATCC as PTA-11042, or by growing a plant comprising the elite event EE-GM3 from the seed deposited at the NCIMB having accession number NCIMB 41659 and crossing said plant with a plant comprising elite event EE-GM2 grown from the seed deposited at the 5 NCIMB having accession number NCIMB 41660. The invention further relates to plants obtainable from (such as by propagation of and/or breeding with) a soybean plant or seed as described immediately above. The invention also relates to soybean plants comprising elite event EE-GM3 and EE-GM1 or EE-GM3 and EE-GM2.

10 The invention further relates to a method for identifying a transgenic plant, or cells or tissues thereof, comprising elite event EE-GM3 and EE-GM1 or EE-GM3 and EE-GM2, which method is based on identifying the presence of characterizing DNA sequences or amino acids encoded by such DNA sequences in the transgenic plant, cells or tissues. According to a preferred embodiment of the invention, such characterizing DNA sequences are sequences of at least 15bp, 15bp, at least 20bp, 20 bp, or 30bp or more which comprise the insertion site of the event, i.e., both a part of the inserted foreign DNA comprising herbicide tolerance genes and a part of the soybean genome (either the 5' or 3' flanking region) contiguous therewith, allowing specific identification of the elite event.

20 The present invention further relates to methods for identifying elite events EE-GM3 and EE-GM1 or elite events EE-GM3 and EE-GM2 in biological samples, which methods are based on primers or probes which specifically recognize the 5' and/or 3' flanking sequence of the foreign DNA comprising the herbicide tolerance genes in EE-GM3 and EE-GM1 or EE-GM3 and EE-GM2.

25 More specifically, the invention relates to a method comprising amplifying two sequences of a nucleic acid present in biological samples, using two polymerase chain reactions each with at least two primers or one polymerase chain reaction with at least four primers, the first primer recognizing the 5' or 3' flanking region of foreign DNA comprising herbicide tolerance genes 30 comprising the herbicide tolerance genes in EE-GM3, the second primer recognizing a sequence within the foreign DNA comprising herbicide tolerance genes of EE-GM3, the third primer

recognizing the 5' or 3' flanking region of foreign DNA comprising the herbicide tolerance genes in EE-GM1 or EE-GM2, and the fourth primer recognizing a sequence within the foreign DNA comprising the herbicide tolerance genes of EE-GM1 or EE-GM2, preferably to obtain two DNA fragments of between 100 and 800 bp. The primers for identifying EE-GM3 may recognize 5 a sequence within the 5' flanking region of EE-GM3 (SEQ ID No. 2, from position 1 to position 1451) or within the 3' flanking region of EE-GM3 (complement of SEQ ID No 3 from position 241 to position 1408) and a sequence within the foreign DNA comprising the herbicide tolerance genes (complement of SEQ ID No 2 from position 1452 to 1843 or SEQ ID No 3 from position 1 to position 240, or SEQ ID No 20 from nucleotide position 1452 to nucleotide position 16638 or 10 its complement), respectively. The primer recognizing the 3' flanking region may comprise the nucleotide sequence of SEQ ID No. 5 and the primer recognizing a sequence within the foreign DNA comprising herbicide tolerance genes may comprise the nucleotide sequence of SEQ ID No. 4 or SEQ ID No.: 7 described herein. The primers for identifying EE-GM1 may recognize a 15 sequence within the 5' flanking region of EE-GM1 (SEQ ID No. 12, from position 1 to position 209) or within the 3' flanking region of EE-GM1 (complement of SEQ ID No 13 from position 569 to position 1000) and a sequence within the foreign DNA comprising herbicide tolerance gene of EE-GM1 (complement of SEQ ID No 12 from position 210 to 720, or SEQ ID No 13 from position 1 to position 568), respectively. The primer recognizing the 5' flanking region of EE-GM1 may comprise the nucleotide sequence of SEQ ID No. 16 and the primer recognizing a 20 sequence within the foreign DNA of EE-GM1 may comprise the nucleotide sequence of SEQ ID No. 17 described herein. The primers for identifying EE-GM2 may recognize a sequence within the 5' flanking region of EE-GM2 (SEQ ID No. 14, from position 1 to position 311) or within the 3' flanking region of EE-GM2 (complement of SEQ ID No 15 from position 508 to position 1880) and a sequence within the foreign DNA comprising herbicide tolerance gene of EE-GM1 25 (complement of SEQ ID No 14 from position 312 to 810, or SEQ ID No 15 from position 1 to position 507), respectively. The primer recognizing the 3' flanking region of EE-GM2 may comprise the nucleotide sequence of SEQ ID No. 18 and the primer recognizing a sequence within the foreign DNA of EE-GM2 may comprise the nucleotide sequence of SEQ ID No. 19 described herein. The PCR amplification may be done simultaneously or sequentially.

The present invention more specifically relates to a method for identifying elite event EE-GM3 and EE-GM1 in biological samples, which method comprises amplifying at least two sequences of nucleic acids present in a biological sample, using a polymerase chain reaction with two primers comprising or consisting (essentially) of the nucleotide sequence of SEQ ID No. 4 and SEQ ID No. 5, respectively, to obtain a DNA fragment of about 263 bp, or with two primers comprising or consisting (essentially) of the nucleotide sequence of SEQ ID No. 5 and SEQ ID No. 7 respectively, to obtain a DNA fragment of about 706 bp, and a polymerase chain reaction with two primers comprising or consisting (essentially) of the nucleotide sequence of SEQ ID No. 16 and SEQ ID No. 17 respectively, to obtain a DNA fragment of about 183 bp. The two polymerase chain reactions may be performed simultaneously or sequentially.

The present invention more specifically relates to a method for identifying elite event EE-GM3 and EE-GM2 in biological samples, which method comprises amplifying at least two sequences of nucleic acids present in a biological sample, using a polymerase chain reaction with two primers comprising or consisting (essentially) of the nucleotide sequence of SEQ ID No. 4 and SEQ ID No. 5 respectively, to obtain a DNA fragment of about 263 bp, or with two primers comprising or consisting (essentially) of the nucleotide sequence of SEQ ID No. 5 and SEQ ID No. 7 respectively, to obtain a DNA fragment of about 706 bp, and a polymerase chain reaction with two primers comprising or consisting (essentially) of the nucleotide sequence of SEQ ID No. 18 and SEQ ID No. 19 respectively, to obtain a DNA fragment of about 151 bp. The two polymerase chain reactions may be performed simultaneously or sequentially.

The present invention further relates to the specific flanking sequences of EE-GM3 described herein in combination with the specific flanking sequences of EE-GM1, which can be used to develop specific identification methods for simultaneous presence of EE-GM3 and EE-GM1 in biological samples. Such combined specific flanking sequences may also be used as reference control material in identification assays. More particularly, the invention relates to the 5' and/or 3' flanking regions of EE-GM3 in combination with the 5' and/or 3' flanking regions of EE-GM1 which can be used for the development of specific primers and probes as further described herein. Also suitable as reference material are nucleic acid molecules, preferably of about 150-850 bp, comprising the sequence which can be amplified by primers comprising or consisting

(essentially) of the nucleotide sequence of SEQ ID No. 7 and SEQ ID No. 5 or of SEQ ID No. 4 and SEQ ID No. 5 in combination with nucleic acid molecules comprising the sequence which can be amplified by primers comprising or consisting (essentially) of the nucleotide sequence of SEQ ID No. 16 and SEQ ID No. 17, particularly such nucleic acid molecules are obtained using 5 such primers in material comprising EE-GM3 and EE-GM1.

The present invention further also relates to the specific flanking sequences of EE-GM3 described herein in combination with the specific flanking sequence of EE-GM2, which can be used to develop specific identification methods for simultaneous presence of EE-GM3 and EE-10 GM2 in biological samples. Such combined specific flanking sequences may also be used as reference control material in identification assays. More particularly, the invention relates to the 5' and/or 3' flanking regions of EE-GM3 in combination with the 5' and/or 3' flanking regions of EE-GM2 which can be used for the development of specific primers and probes as further described herein. Also suitable as reference material are nucleic acid molecules, preferably of 15 about 150-850 bp, comprising the sequence which can be amplified by primers comprising or consisting (essentially) of the nucleotide sequence of SEQ ID No. 7 and SEQ ID No. 5 or of SEQ ID No. 4 and SEQ ID No. 5 in combination with nucleic acid molecules comprising the sequence which can be amplified by primers comprising or consisting (essentially) of the nucleotide sequence of SEQ ID No. 18 and SEQ ID No. 19, particularly such nucleic acid molecules are 20 obtained using such primers in material comprising EE-GM3 and EE-GM2.

The invention further relates to identification methods for the simultaneous presence of EE-GM3 and EE-GM1 in biological samples based on the use of such specific primers or probes. Primers for EE-GM3 detection may comprise, consist or consist essentially of a nucleotide sequence of 25 17 to about 200 consecutive nucleotides selected from the nucleotide sequence of SEQ ID No 2 from nucleotide 1 to nucleotide 1451 or the complement of the nucleotide sequence of SEQ ID 3 from nucleotide 241 to nucleotide 1408, combined with primers comprising, consisting, or consisting essentially of a nucleotide sequence of 17 to about 200 consecutive nucleotides selected from the nucleotide sequence of SEQ ID No 1, such as a nucleotide sequence of 17 to 30 about 200 consecutive nucleotides selected from the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1452 to nucleotide 1843 or the nucleotide sequence of SEQ ID No

3 from nucleotide 1 to nucleotide 240.. Primers for EE-GM1 detection may comprise, consist or consist essentially of a nucleotide sequence of 17 to about 200 consecutive nucleotides selected from the nucleotide sequence of SEQ ID No 12 from nucleotide 1 to nucleotide 209 or the complement of the nucleotide sequence of SEQ ID 13 from nucleotide 569 to nucleotide 1000,
5 combined with primers comprising, consisting, or consisting essentially of a nucleotide sequence of 17 to about 200 consecutive nucleotides selected from the nucleotide sequence of SEQ ID No 11, such as a nucleotide sequence of 17 to about 200 consecutive nucleotides selected from the complement of the nucleotide sequence of SEQ ID No 12 from nucleotide 219 to nucleotide 720 or the nucleotide sequence of SEQ ID No 13 from nucleotide 1 to nucleotide 568. Primers may
10 also comprise these nucleotide sequences located at their extreme 3' end, and further comprise unrelated sequences or sequences derived from the mentioned nucleotide sequences, but comprising mismatches.

The invention further relates to identification methods for the simultaneous presence of EE-GM3
15 and EE-GM2 in biological samples based on the use of such specific primers or probes. Primers for EE-GM3 detection may comprise, consist or consist essentially of a nucleotide sequence of 17 to about 200 consecutive nucleotides as described in the previous paragraph. Primers for EE-GM2 detection may comprise, consist or consist essentially of a nucleotide sequence of 17 to about 200 consecutive nucleotides selected from the nucleotide sequence of SEQ ID No 14 from
20 nucleotide 1 to nucleotide 311 or the complement of the nucleotide sequence of SEQ ID 15 from nucleotide 508 to nucleotide 1880, combined with primers comprising, consisting or consisting essentially of a nucleotide sequence of 17 to about 200 consecutive nucleotides selected from the nucleotide sequence of SEQ ID No 11, such as a nucleotide sequence of 17 to about 200 consecutive nucleotides selected from the complement of the nucleotide sequence of SEQ ID No
25 14 from nucleotide 312 to nucleotide 810 or the nucleotide sequence of SEQ ID No 15 from nucleotide 1 to nucleotide 507. Primers may also comprise these nucleotide sequences located at their extreme 3' end, and further comprise unrelated sequences or sequences derived from the mentioned nucleotide sequences, but comprising mismatches.

30 The invention further relates to kits for identifying elite events EE-GM3 and EE-GM1 in biological samples, said kits comprising at least one primer or probe which specifically

recognizes the 5' or 3' flanking region of the foreign DNA comprising herbicide tolerance genes in EE-GM3 and at least one primer or probe which specifically recognizes the 5' or 3' flanking region of the foreign DNA comprising herbicide tolerance genes in EE-GM1.

5 The invention further relates to kits for identifying elite events EE-GM3 and EE-GM2 in biological samples, said kits comprising at least one primer or probe which specifically recognizes the 5' or 3' flanking region of the foreign DNA comprising herbicide tolerance genes in EE-GM3 and at least one primer or probe which specifically recognizes the 5' or 3' flanking region of the foreign DNA comprising a herbicide tolerance gene in EE-GM2.

10

The kits of the invention may comprise, in addition to a primer which specifically recognizes the 5' or 3' flanking region of EE-GM3 and the 5' or 3' flanking region of EE-GM1, a further primer which specifically recognizes a sequence within the foreign DNA comprising herbicide tolerance genes of EE-GM3 and a further primer which specifically recognizes a sequence within 15 the foreign DNA comprising herbicide tolerance genes of EE-GM1, for use in a PCR Identification Protocol.

The kits of the invention may also comprise, in addition to a primer which specifically recognizes the 5' or 3' flanking region of EE-GM3 and the 5' or 3' flanking region of EE-GM2, 20 a further primer which specifically recognizes a sequence within the foreign DNA comprising herbicide tolerance genes of EE-GM3 and a further primer which specifically recognizes a sequence within the foreign DNA comprising herbicide tolerance genes of EE-GM2, for use in a PCR Identification Protocol.

25 The primer recognizing the 3'flanking region of EE-GM3 may comprise the nucleotide sequence of SEQ ID No. 5 and the primer recognizing the transgenes or foreign DNA comprising herbicide tolerance genes of EE-GM3 may comprises the nucleotide sequence of SEQ ID No. 4 or 7, or any other primer or primer combination for EE-GM3 detection as described herein, in combination with a primer recognizing the 5' flanking region of EE-GM1 which may comprise 30 the nucleotide sequence of SEQ ID No. 16 and a primer recognizing the transgenes of foreign

DNA comprising the herbicide tolerance gene of EE-GM1 may comprise the nucleotide sequence of SEQ ID No 17.

The primer recognizing the 3'flanking region of EE-GM3 may comprise the nucleotide sequence 5 of SEQ ID No. 5 and the primer recognizing the transgenes or foreign DNA comprising herbicide tolerance genes of EE-GM3 may comprises the nucleotide sequence of SEQ ID No. 4 or 7, or any other primer or primer combination for EE-GM3 detection as described herein, in combination with a primer recognizing the 5' flanking region of EE-GM2 which may comprise the nucleotide sequence of SEQ ID No. 18 and a primer recognizing the transgenes of foreign 10 DNA comprising the herbicide tolerance gene of EE-GM2 may comprise the nucleotide sequence of SEQ ID No 19.

The invention further relates to a kit for identifying elite event EE-GM3 and EE-GM1 in biological samples, said kit comprising PCR primers comprising or consisting (essentially) of 15 the nucleotide sequence of SEQ ID No. 5 and SEQ ID No. 4 and PCR primers comprising or consisting (essentially) of the nucleotide sequence of SEQ ID 16 and SEQ ID 17 for use in the EE-GM3/EE-GM1 PCR based identification.

The invention further relates to a kit for identifying elite event EE-GM3 and EE-GM2 in 20 biological samples, said kit comprising PCR primers comprising or consisting (essentially) of the nucleotide sequence of SEQ ID No. 5 and SEQ ID No. 4 and PCR primers comprising or consisting (essentially) of the nucleotide sequence of SEQ ID 18 and SEQ ID 19 for use in the EE-GM3/EE-GM2 PCR based identification.

25 The invention also relates to a kit for identifying elite event EE-GM3 and EE-GM1 in biological samples, which kit comprises two specific probes, a first probe comprising or consisting (essentially) of a sequence which corresponds (or is complementary to) a sequence having between 80% and 100% sequence identity with a specific region of EE-GM3 and a second probe comprising or consisting (essentially) of a sequence which corresponds (or is complementary to) 30 a sequence having between 80% and 100% sequence identity with a specific region of EE-GM1. Preferably, the sequence of the first probe corresponds to a specific region comprising part of the

5' or 3' flanking region of EE-GM3 and the second probe corresponds to a specific region comprising part of the 5' or 3' flanking region of EE-GM1. Most preferably the EE-GM3 specific probe comprises or consists (essentially) of (or is complementary to) a sequence having between 80% and 100% sequence identity to the sequence between nucleotide 1441 to 1462 of 5 SEQ ID No 2 or a sequence having between 80% and 100% sequence identity to the sequence between nucleotide 220 to 260 of ID No. 3 and the EE-GM1 specific probe comprises, consists (essentially) of (or is complementary to) a sequence having between 80% and 100% sequence identity to the sequence between nucleotide 199 to 220 of SEQ ID No 12 or a sequence having between 80% and 100% sequence identity to the sequence between nucleotide 558 to 579 of ID 10 No. 13.

The invention also relates to a kit for identifying elite event EE-GM3 and EE-GM2 in biological samples, which kit comprises two specific probes, a first probe comprising or consisting (essentially) of a sequence which corresponds (or is complementary to) a sequence having 15 between 80% and 100% sequence identity with a specific region of EE-GM3 and a second probe comprising or consisting (essentially) of a sequence which corresponds (or is complementary to) a sequence having between 80% and 100% sequence identity with a specific region of EE-GM2. Preferably, the sequence of the first probe corresponds to a specific region comprising part of the 5' or 3' flanking region of EE-GM3 and the second probe corresponds to a specific region comprising part of the 5' or 3' flanking region of EE-GM2. Most preferably the EE-GM3 specific probe comprises or consists (essentially) of (or is complementary to) a sequence having 20 between 80% and 100% sequence identity to the sequence between nucleotide 1441 to 1462 of SEQ ID No 2 or a sequence having between 80% and 100% sequence identity to the sequence between nucleotide 220 to 260 of ID No. 3 and the EE-GM2 specific probe comprises or consists (essentially) of (or is complementary to) a sequence having between 80% and 100% sequence identity to the sequence between nucleotide 301 to 322 of SEQ ID No 14 or a sequence having 25 between 80% and 100% sequence identity to the sequence between nucleotide 497 to 518 of ID No. 15.

30 According to another aspect of the invention, DNA sequences are disclosed comprising a junction site of the event and sufficient length of polynucleotides of both the soybean genomic

DNA and the foreign DNA comprising herbicide tolerance genes (transgene) of each event, so as to be useful as primer or probe for the detection of EE-GM3 and EE-GM1. Such sequences may comprise at least 9 nucleotides of the soybean genomic DNA and a similar number of nucleotides of the foreign DNA comprising herbicide tolerance genes (transgene) of EE-GM3 or 5 EE-GM1, at each side of the junction site respectively. Most preferably, such DNA sequences comprise at least 9 nucleotides of the soybean genomic DNA and a similar number of nucleotides of the foreign DNA comprising herbicide tolerance genes contiguous with the junction site in SEQ ID NO: 2 or SEQ ID NO: 3 and at least 9 nucleotides of the soybean genomic DNA and a similar number of nucleotides of the foreign DNA comprising herbicide 10 tolerance genes contiguous with the junction site in SEQ ID NO: 12 or SEQ ID NO: 13.

According to yet another aspect of the invention, DNA sequences are disclosed comprising a junction site of the event and sufficient length of polynucleotides of both the soybean genomic DNA and the foreign DNA comprising herbicide tolerance genes (transgene) of each event, so as to be useful as primer or probe for the detection of EE-GM3 and EE-GM2. Such sequences may 15 comprise at least 9 nucleotides of the soybean genomic DNA and a similar number of nucleotides of the foreign DNA comprising herbicide tolerance genes (transgene) of EE-GM3 or EE-GM2, at each side of the insertion site respectively. Most preferably, such DNA sequences comprise at least 9 nucleotides of the soybean genomic DNA and a similar number of 20 nucleotides of the foreign DNA comprising herbicide tolerance genes contiguous with the junction site in SEQ ID NO: 2 or SEQ ID NO: 3 and at least 9 nucleotides of the soybean genomic DNA and a similar number of nucleotides of the foreign DNA comprising herbicide tolerance genes contiguous with the junction site in SEQ ID NO: 14 or SEQ ID NO: 15.

25 The methods and kits encompassed by the present invention can be used for different purposes such as, but not limited to the following: to identify the presence or determine the (lower) threshold of EE-GM3 and EE-GM1 or of EE-GM3 and EE-GM2 in plants, plant material or in products such as, but not limited to food or feed products (fresh or processed) comprising or derived from plant material; additionally or alternatively, the methods and kits of the present 30 invention can be used to identify transgenic plant material for purposes of segregation between transgenic and non-transgenic material; additionally or alternatively, the methods and kits of the

present invention can be used to determine the quality (i.e., percentage pure material) of plant material comprising EE-GM3 and EE-GM1 or EE-GM3 and EE-GM1.

5 The invention further relates to the 5' and/or 3' flanking regions of EE-GM3 GM3 in combination with specific primers and probes developed from the 5' and/or 3' flanking sequences of EE-GM1 or EE-GM2, as well as to the specific primers and probes developed from the 5' and/or 3' flanking sequences of EE-GM3 in combination with specific primers and probes developed from the 5' and/or 3' flanking sequences of EE-GM1 or EE-GM2.

10 The invention also relates to genomic DNA obtained from plants comprising elite events EE-GM3 and EE-GM1 or plants comprising elite events EE-GM3 and EE-GM2. Such genomic DNA may be used as reference control material in the identification assays herein described.

15 Also provided herein is a transgenic herbicide tolerant soybean plant, or cells, parts, seeds or progeny thereof, each comprising at least two elite events, said first elite event comprising a foreign DNA comprising:

20 i) a first chimeric gene which comprises a modified *epsps* gene from *Zea mays* encoding a glyphosate tolerant EPSPS enzyme under the control of a plant-expressible promoter, and
ii) a second chimeric gene which comprises a modified *hpd* gene from *Pseudomonas fluorescens* encoding an HPPD inhibitor herbicide tolerant enzyme under the control of a plant-expressible promoter, and said second elite event comprises a (third) chimeric gene which comprises a modified glufosinate tolerance gene derived from *Streptomyces viridochromogenes* encoding a glufosinate (or phosphinothricin) acetyltransferase enzyme under the control of a plant-expressible promoter.

25 In one embodiment, said first elite event comprises nucleotides 1 to 1451 of SEQ ID No 2 immediately upstream of and contiguous with said foreign DNA and nucleotides 241 to 1408 of SEQ ID No 3 immediately downstream of and contiguous with said foreign DNA, and said second event comprises nucleotides 1 to 209 of SEQ ID No 12 immediately upstream of and 30 contiguous with said foreign DNA and nucleotides 569 to 1000 of SEQ ID No 13 immediately downstream of and contiguous with said foreign DNA, or said second event comprises

nucleotides 1 to 311 of SEQ ID No 14 immediately upstream of and contiguous with said foreign DNA and nucleotides 508 to 1880 of SEQ ID No 15 immediately downstream of and contiguous with said foreign DNA.

5 In a further embodiment, said elite event is obtainable by breeding with a soybean plant grown from reference seed comprising said events having been deposited at the ATCC under deposit number PTA-11041 or PTA-11042, or obtainable from reference seed comprising said first event having been deposited at NCIMB under accession number NCIMB 41659, and obtainable from reference seed comprising said second event having been deposited at NCIMB under accession 10 number NCIMB 41658 or NCIMB accession number NCIMB 41660.

In another embodiment, the genomic DNA of said soybean plant, or cells, parts, seeds or progeny thereof when analyzed using the elite event identification protocol for said first elite event with two primers comprising the nucleotide sequence of SEQ ID No 4 and SEQ ID No 5 15 respectively, yields a DNA fragment of about 263 bp or 263 bp, and when analyzed using the elite event identification protocol for said second elite event with two primers comprising the nucleotide sequence of SEQ ID No 16 and SEQ ID No 17 respectively, yields a DNA fragment of about 183 bp or 183 bp, or with two primers comprising the nucleotide sequence of SEQ ID No 18 and SEQ ID No 19 respectively, yields a DNA fragment of about 151 bp or 151 bp.

20 Also provided herein is a method for identifying a transgenic soybean plant, or cells, parts, seed or progeny thereof comprising 2 elite events, wherein said plant, cells, seed, or progeny are tolerant to glyphosate, glufosinate and an HPPD inhibitor herbicide (such as isoxaflutole), in biological samples, said method comprising amplifying a DNA fragment of between 100 and 25 500 bp from a nucleic acid of said first event present in biological samples using a polymerase chain reaction with at least two primers, one of said primers recognizing the 5' flanking region of the first elite event specified above, said 5' flanking region comprising the nucleotide sequence of SEQ ID No 2 from nucleotide 1 to nucleotide 1451, or the 3' flanking region of said first elite event, said 3' flanking region comprising the nucleotide sequence of the complement of SEQ ID 30 No 3 from nucleotide 241 to nucleotide 1408, the other primer of said primers recognizing a sequence within the foreign DNA of said first event comprising the nucleotide sequence of the

complement of SEQ ID No 2 from nucleotide 1452 to nucleotide 1843 or the nucleotide sequence of SEQ ID No 3 from nucleotide 1 to nucleotide 240, and comprising amplifying a DNA fragment of between 50 and 1000 bp, or between 100 and 500 bp from a nucleic acid of said second event present in biological samples using a polymerase chain reaction with at least 5 two primers, one of said primers recognizing the 5' flanking region of the second elite event specified above, said 5' flanking region comprising the nucleotide sequence of nucleotides 1 to 209 of SEQ ID No 12, or the 3' flanking region of said second elite event, said 3' flanking region comprising the nucleotide sequence of the complement of nucleotides 569 to 1000 of SEQ ID No 13, the other primer of said primers recognizing a sequence within the foreign DNA of said 10 second event comprising the nucleotide sequence of the complement of SEQ ID No 12 from nucleotide 210 to nucleotide 720 or the nucleotide sequence of SEQ ID No 13 from nucleotide 1 to nucleotide 568.

Also provided herein is a method for identifying a transgenic soybean plant, or cells, parts, seed 15 or progeny thereof comprising 2 elite events, wherein said plant, cells, seed, or progeny are tolerant to glyphosate, glufosinate and/or an HPPD inhibitor herbicide (such as isoxaflutole), in biological samples, said method comprising amplifying a DNA fragment of between 50 and 1000 or between 100 and 500 bp from a nucleic acid of said first event present in biological samples using a polymerase chain reaction with at least two primers, one of said primers 20 recognizing the 5' flanking region of the first elite event specified above, said 5' flanking region comprising the nucleotide sequence of SEQ ID No 2 from nucleotide 1 to nucleotide 1451, or the 3' flanking region of said first elite event, said 3' flanking region comprising the nucleotide sequence of the complement of SEQ ID No 3 from nucleotide 241 to nucleotide 1408, the other primer of said primers recognizing a sequence within the foreign DNA of said first event comprising the nucleotide sequence of the complement of SEQ ID No 2 from nucleotide 1452 to nucleotide 1843 or the nucleotide sequence of SEQ ID No 3 from nucleotide 1 to nucleotide 240, and comprising amplifying a DNA fragment of between 50 and 1000 bp or between 100 and 500 bp from a nucleic acid of said second event present in biological samples using a polymerase chain reaction with at least two primers, one of said primers recognizing the 5' flanking region of 25 the second elite event specified above, said 5' flanking region comprising the nucleotide sequence of nucleotides 1 to 311 of SEQ ID No 14, or the 3' flanking region of said second elite 30

event, said 3' flanking region comprising the nucleotide sequence of the complement of nucleotides 508 to 1880 of SEQ ID No 15, the other primer of said primers recognizing a sequence within the foreign DNA of said second event comprising the nucleotide sequence of the complement of SEQ ID No 14 from nucleotide 312 to nucleotide 810 or the nucleotide sequence of SEQ ID No 15 from nucleotide 1 to nucleotide 507.

Also provided herein is a kit for identifying a transgenic soybean plant, or cells, parts, seed or progeny thereof comprising 2 elite events and being tolerant to glyphosate, glufosinate and an HPPD inhibitor herbicide (such as isoxaflutole), in biological samples, said kit comprising one primer recognizing the 5' flanking region of the first elite event specified above, said 5' flanking region comprising the nucleotide sequence of SEQ ID No 2 from nucleotide 1 to nucleotide 1451, or one primer recognizing the 3' flanking region of said first elite event, said 3' flanking region comprising the nucleotide sequence of the complement of SEQ ID No 3 from nucleotide 241 to nucleotide 1408, and one primer recognizing a sequence within the foreign DNA of said first event, said foreign DNA comprising the nucleotide sequence of the complement of SEQ ID No. 2 from nucleotide 1452 to nucleotide 1843 or the nucleotide sequence of SEQ ID No 3 from nucleotide 1 to nucleotide 240, and said kit comprising one primer recognizing the 5' flanking region of the second elite event specified above, said 5' flanking region comprising the nucleotide sequence of nucleotides 1 to 209 of SEQ ID No 12, or one primer recognizing the 3' flanking region of said second elite event, said 3' flanking region comprising the nucleotide sequence of the complement of nucleotides 569 to 1000 of SEQ ID No 13, the other primer of said primers recognizing a sequence within the foreign DNA of said second event comprising the nucleotide sequence of the complement of SEQ ID No 12 from nucleotide 210 to nucleotide 720 or the nucleotide sequence of SEQ ID No 13 from nucleotide 1 to nucleotide 568.

Also provided herein is a kit for identifying a transgenic soybean plant, or cells, parts, seed or progeny thereof comprising 2 elite events and being tolerant to glyphosate, glufosinate and an HPPD inhibitor herbicide (such as isoxaflutole), in biological samples, said kit comprising one primer recognizing the 5' flanking region of the first elite event specified above, said 5' flanking region comprising the nucleotide sequence of SEQ ID No 2 from nucleotide 1 to nucleotide 1451, or one primer recognizing the 3' flanking region of said first elite event, said 3' flanking

region comprising the nucleotide sequence of the complement of SEQ ID No 3 from nucleotide 241 to nucleotide 1408, and one primer recognizing a sequence within the foreign DNA of said first event, said foreign DNA comprising the nucleotide sequence of the complement of SEQ ID No. 2 from nucleotide 1452 to nucleotide 1843 or the nucleotide sequence of SEQ ID No 3 from 5 nucleotide 1 to nucleotide 240, and said kit comprising one primer recognizing the 5' flanking region of the second elite event specified above, said 5' flanking region comprising the nucleotide sequence of nucleotides 1 to 311 of SEQ ID No 14, or the 3' flanking region of said second elite event, said 3' flanking region comprising the nucleotide sequence of the complement of nucleotides 508 to 1880 of SEQ ID No 15, the other primer of said primers 10 recognizing a sequence within the foreign DNA of said second event comprising the nucleotide sequence of the complement of SEQ ID No 14 from nucleotide 312 to nucleotide 810 or the nucleotide sequence of SEQ ID No 15 from nucleotide 1 to nucleotide 507.

Also provided herein is a soybean plant, plant cell, tissue, or seed, comprising in their genome a 15 nucleic acid molecule comprising a nucleotide sequence with at least 97, 98, or at least 99 % or 99.5 % sequence identity to the nucleotide sequence of SEQ ID No. 20 from nucleotide position 1452 to nucleotide position 16638, the nucleotide sequence of SEQ ID No. 20 from nucleotide position 2257 to nucleotide position 16601 or their complement, or a nucleotide sequence with at 20 least 97, 98, or at least 99 % or 99.5 % sequence identity to SEQ ID No. 20 or the complement thereof, and comprising in their genome a nucleic acid molecule comprising a nucleotide sequence with at least 97, 98, or at least 99 % or 99.5 % sequence identity to the nucleotide sequence of EE-GM1 or EE-GM2 or the complement thereof, reference seed comprising EE-GM1 having been deposited under deposit number NCIMB 41658, and reference seed comprising EE-GM2 having been deposited under deposit number NCIMB 41660. In one 25 embodiment of this invention, the nucleotide sequence of EE-GM1 or EE-GM2 in said plant, plant cell, tissue, or seed, is the DNA sequence (such as the foreign DNA sequence) in SEQ ID No 12 or 13, or the DNA sequence (such as the foreign DNA sequence) in SEQ ID No 14 or 15, or the DNA sequence in the plant genome (such as in the deposited seeds comprising EE-GM1 or EE-GM2 of the invention) comprising SEQ ID No 12 and 13 between the first nucleotide of 30 the sequence of SEQ ID No 12 and the last nucleotide of the sequence of SEQ ID No 13, or the DNA sequence in the plant genome comprising SEQ ID No 14 and 15 between the first

nucleotide of the sequence of SEQ ID No 14 and the last nucleotide of the sequence of SEQ ID No 15.

One embodiment of this invention provides a soybean plant, plant cell, tissue, or seed, comprising in their genome a nucleic acid molecule hybridizing to the nucleotide sequence of SEQ ID No 1 or the complement thereof, or hybridizing to the nucleotide sequence of SEQ ID No. 20 from nucleotide

5 position 1452 to nucleotide position 16638 or the complement thereof, or hybridizing to the nucleotide sequence of SEQ ID No. 20 or the complement thereof, and comprising in their genome a nucleic acid molecule hybridizing to the nucleotide sequence of EE-GM1 or EE-GM2 or the complement thereof, reference seed comprising EE-GM1 having been deposited under deposit number NCIMB 41658, and reference seed comprising EE-GM2 having been deposited under deposit number NCIMB 41660. In
10 one embodiment of this invention, the nucleotide sequence of EE-GM1 or EE-GM2 in said plant, plant cell, tissue, or seed, is the foreign DNA in SEQ ID No 12 or 13, or the foreign DNA in SEQ ID No 14 or 15, or the foreign DNA sequence in the plant genome (such as in the deposited seeds comprising EE-GM1 or EE-GM2 of the invention) comprising SEQ ID No 12 and 13 between the first nucleotide of the sequence of SEQ ID No 12 and the last nucleotide of the sequence of SEQ ID No 13, or the
15 foreign DNA sequence in the plant genome comprising SEQ ID No 14 and 15 between the first nucleotide of the sequence of SEQ ID No 14 and the last nucleotide of the sequence of SEQ ID No 15.

The present invention as claimed relates to:

- a soybean plant cell comprising in its genome elite event EE-GM3 and elite event EE-GM2, wherein elite event EE-GM3 comprises a nucleotide sequence which is at least 90 %
20 identical to the full sequence set forth in SEQ ID No 20, and elite event EE-GM3 comprises a chimeric gene encoding a functional HPPD Pf W366 protein and a chimeric gene encoding a functional 2mEPSPS protein, wherein elite event EE-GM2 comprises a nucleotide sequence which is at least 90 % identical to the sequence formed by the following sequences in order:
 - a) the nucleotide sequence of SEQ ID No 14 from nucleotide 1 to 311, b) the nucleotide sequence of
25 SEQ ID No 11 from nucleotide 3458 to nucleotide 3848, c) the nucleotide sequence of SEQ ID No 11 from nucleotide 413 to nucleotide 3457, and d) the nucleotide sequence of SEQ ID No 15 from nucleotide 508 to nucleotide 1880, and elite event EE-GM2 comprises a chimeric phosphinothricin acetyltransferase encoding gene, and wherein said plant cell is tolerant to an HPPD inhibitor herbicide, a glufosinate-based herbicide and a glyphosate-based herbicide;

- a pair of nucleic acid molecules, the first nucleic acid molecule comprising the nucleotide sequence of SEQ ID No 2 from nucleotide 1431 to nucleotide 1462, or the complement thereof, and the second nucleic acid molecule comprising the nucleotide sequence of SEQ ID No 14 from nucleotide 301 to nucleotide 322, or the complement thereof;

5 - a method for identifying the simultaneous presence of elite events EE-GM3 and EE-GM2 as defined herein in a biological sample, which method comprises detection of an EE-GM3 specific region with two specific primers, one of which specifically recognizes a sequence within the 5' or 3' flanking region of foreign DNA comprising herbicide tolerance genes in EE-GM3, and the other primer specifically recognizing a sequence within the foreign DNA contiguous with said 5' or 3'

10 flanking region of EE-GM3, and detection of an EE-GM2 specific region with two specific primers, one of which specifically recognizing the 5' or 3' flanking region of foreign DNA comprising herbicide tolerance genes in EE-GM2, and the other primer specifically recognizing a sequence within the foreign DNA contiguous with said 5' or 3' flanking region of EE-GM2, or said method comprising detection of an EE-GM3 specific region with a specific probe, which specifically recognizes part of

15 the 5' or 3' flanking region of EE-GM3, and part of the foreign DNA contiguous therewith, and detection of an EE-GM2 specific region with another specific probe which specifically recognizes part of the 5' or 3' flanking region of EE-GM2, and part of the foreign DNA contiguous therewith, wherein said 5' flanking region of EE-GM3 comprises the nucleotide sequence of SEQ ID No 2 from nucleotide 1 to nucleotide 1451, said 3' flanking region of EE-GM3 comprises the nucleotide sequence

20 of the complement of SEQ ID No 3 from nucleotide 241 to nucleotide 1408, said foreign DNA contiguous with said 5' or 3' flanking region of EE-GM3 comprises the nucleotide sequence of the complement of SEQ ID No 2 from nucleotide 1452 to nucleotide 1843 or the nucleotide sequence of SEQ ID No 3 from nucleotide 1 to nucleotide 240 or the nucleotide sequence of SEQ ID No 1 or its complement, or the nucleotide sequence of SEQ ID No 20 from nucleotide position 1452 to

25 nucleotide position 16638 or its complement, and said 5' flanking region of EE-GM2 comprises the nucleotide sequence of SEQ ID No 14 from nucleotide 1 to nucleotide 311, said 3' flanking region of EE-GM2 comprises the nucleotide sequence of the complement of SEQ ID No 15 from nucleotide 508 to nucleotide 1880, and said foreign DNA contiguous with said 5' or 3' flanking region of EE-GM2 comprises the nucleotide sequence of the complement of SEQ ID No 14 from nucleotide 312 to

30 nucleotide 810 or the nucleotide sequence of SEQ ID No 15 from nucleotide 1 to nucleotide 507 or the nucleotide sequence of SEQ ID No 11 or its complement;

- two pairs of primers suitable for specifically detecting elite events EE-GM3 and EE-GM2 as defined herein, said first primer pair comprising a first primer comprising a sequence which recognizes a sequence within the 5' or 3' flanking region of foreign DNA comprising herbicide tolerance genes in EE-GM3, and a second primer comprising a sequence which recognizes a sequence within the foreign DNA sequences contiguous with said 5' or 3' flanking region in EE-GM3, and said second primer pair comprising a third primer comprising a sequence which recognizes a sequence within the 5' or 3' flanking region of foreign DNA comprising a herbicide tolerance gene in EE-GM2, and a fourth primer comprising a sequence which recognizes a sequence within the foreign DNA sequences contiguous with said 5' or 3' flanking region in EE-GM2, wherein said 5' flanking region of EE-GM3 5 comprises the nucleotide sequence of SEQ ID No 2 from nucleotide 1 to nucleotide 1451, said 3' flanking region of EE-GM3 comprises the nucleotide sequence of the complement of SEQ ID No 3 from nucleotide 241 to nucleotide 1408, said foreign DNA contiguous with said 5' or 3' flanking region of EE-GM3 comprises the nucleotide sequence of the complement of SEQ ID No 2 from nucleotide 1452 to nucleotide 1843 or the nucleotide sequence of SEQ ID No 3 from nucleotide 1 to 10 nucleotide 240 or the nucleotide sequence of SEQ ID No 1 or its complement, or the nucleotide sequence of SEQ ID No 20 from nucleotide position 1452 to nucleotide position 16638 or its complement, and said 5' flanking region of EE-GM2 comprises the nucleotide sequence of SEQ ID No 14 from nucleotide 1 to nucleotide 311, said 3' flanking region of EE-GM2 comprises the nucleotide sequence of the complement of SEQ ID No 15 from nucleotide 508 to nucleotide 1880, and 15 said foreign DNA contiguous with said 5' or 3' flanking region of EE-GM2 comprises the nucleotide sequence of the complement of SEQ ID No 14 from nucleotide 312 to nucleotide 810 or the nucleotide sequence of SEQ ID No 15 from nucleotide 1 to nucleotide 507 or the nucleotide sequence of SEQ ID No 11 or its complement;
- a set comprising four primers, a first primer comprising at its extreme 3' end the sequence of SEQ ID No 5; a second primer comprising at its extreme 3' end the sequence of SEQ ID No 4; a third primer comprising at its extreme 3' end the sequence of SEQ ID No 18; and a fourth primer comprising at its extreme 3' end the sequence of SEQ ID No 19;
- a pair of specific probes for the identification of the simultaneous presence of elite event EE-GM3 and elite event EE-GM2 as defined herein in a biological sample, which comprises a first probe comprising a nucleotide sequence having at least 80% sequence identity with a sequence comprising part of the 5' or 3' flanking sequence of foreign DNA comprising herbicide tolerance genes in EE-GM3 and the sequence of the foreign DNA contiguous therewith,

or the complement thereof, and a second probe comprising a nucleotide sequence having at least 80% sequence identity with a sequence comprising part of the 5' or 3' flanking sequence of foreign DNA comprising herbicide tolerance genes in EE-GM2 and the sequence of the foreign DNA contiguous therewith, or the complement thereof, wherein said 5' flanking region of EE-GM3 comprises the

5 nucleotide sequence of SEQ ID No 2 from nucleotide 1 to nucleotide 1451, said 3' flanking region of EE-GM3 comprises the nucleotide sequence of the complement of SEQ ID No 3 from nucleotide 241 to nucleotide 1408, said foreign DNA contiguous with said 5' or 3' flanking region of EE-GM3 comprises the nucleotide sequence of the complement of SEQ ID No 2 from nucleotide 1452 to nucleotide 1843 or the nucleotide sequence of SEQ ID No 3 from nucleotide 1 to nucleotide 240 or the

10 nucleotide sequence of SEQ ID No 1 or its complement, or the nucleotide sequence of SEQ ID No 20 from nucleotide position 1452 to nucleotide position 16638 or its complement, and said 5' flanking region of EE-GM2 comprises the nucleotide sequence of SEQ ID No 14 from nucleotide 1 to nucleotide 311, said 3' flanking region of EE-GM2 comprises the nucleotide sequence of the complement of SEQ ID No 15 from nucleotide 508 to nucleotide 1880, and said foreign DNA

15 contiguous with said 5' or 3' flanking region of EE-GM2 comprises the nucleotide sequence of the complement of SEQ ID No 14 from nucleotide 312 to nucleotide 810 or the nucleotide sequence of SEQ ID No 15 from nucleotide 1 to nucleotide 507 or the nucleotide sequence of SEQ ID No 11 or its complement; and

- a method of detecting the presence of elite events EE-GM3 and EE-GM2 as defined herein in a

20 biological sample through hybridization with a substantially complementary labeled nucleic acid probe in which the probe:target nucleic acid ratio is amplified through recycling of the target nucleic acid sequence, said method comprising: a) hybridizing said target nucleic acid sequence to a first nucleic acid oligonucleotide comprising the nucleotide sequence of SEQ ID No 2 from nucleotide 1452 to nucleotide 1469 or its complement or said first nucleic acid oligonucleotide comprising the nucleotide

25 sequence of SEQ ID No 3 from nucleotide 223 to nucleotide 240 or its complement; b) hybridizing said target nucleic acid sequence to a second nucleic acid oligonucleotide comprising the nucleotide sequence of SEQ ID No 2 from nucleotide 1434 to nucleotide 1451 or its complement or said second nucleic acid oligonucleotide comprising the nucleotide sequence of SEQ ID No 3 from nucleotide 241 to nucleotide 258 or its complement, wherein said first and second oligonucleotide overlap by at least

30 one nucleotide and wherein either said first or said second oligonucleotide is labeled to be said labeled nucleic acid probe; c) cleaving only the labeled probe within the probe:target nucleic acid sequence duplex with an enzyme which causes selective probe cleavage resulting in duplex disassociation,

leaving the target sequence intact; d) recycling of the target nucleic acid sequence by repeating steps (a) to (c); and e) detecting cleaved labeled probe, thereby determining the presence of said target nucleic acid sequence, and f) hybridizing said target nucleic acid sequence to a third nucleic acid oligonucleotide comprising the nucleotide sequence of SEQ ID No 14 from nucleotide 312 to 5 nucleotide 329 or its complement or said third nucleic acid oligonucleotide comprising the nucleotide sequence of SEQ ID No 15 from nucleotide 490 to nucleotide 507 or its complement; g) hybridizing said target nucleic acid sequence to a fourth nucleic acid oligonucleotide comprising the nucleotide sequence of SEQ ID No 14 from nucleotide 294 to nucleotide 311 or its complement or said fourth nucleic acid oligonucleotide comprising the nucleotide sequence of SEQ ID No 15 from 10 nucleotide 508 to nucleotide 525 or its complement, wherein said third and fourth oligonucleotide overlap by at least one nucleotide and wherein either said third or said fourth oligonucleotide is labeled to be said labeled nucleic acid probe; h) cleaving only the labeled probe within the probe:target nucleic acid sequence duplex with an enzyme which causes selective probe cleavage resulting in duplex disassociation, leaving the target sequence intact; i) recycling of the target nucleic acid sequence by 15 repeating steps (f) to (h); and j) detecting cleaved labeled probe, thereby determining the presence of said target nucleic acid sequence.

Brief Description of the Drawings

The following Examples, not intended to limit the invention to specific embodiments described, may be understood in conjunction with the accompanying Figures, in which:

20 **Fig. 1: Schematic representation of the relationship between the cited nucleotide sequences and primers for elite event EE-GM3**, black bar: foreign DNA; hatched bar: DNA of plant origin; checkered arrow (a): chimeric HPPD PF W366 encoding gene (see Table 1 for composition of the chimeric gene); hatched arrow (b): chimeric 2mEPSPS

encoding gene (see Table 1 for composition of the chimeric gene); black arrows: oligonucleotide primers, the figures under the bars represent nucleotide positions; (c) refers to complement of the indicated nucleotide sequence; Note: the scheme is not drawn to scale.

5

Fig. 2: Results obtained by the PCR Identification Protocol developed for EE-GM3.

10 Loading sequence of the gel: Lane1: Molecular weight marker (100 bp ladder); lanes 2 and 3: DNA samples from soybean plants comprising the transgenic event EE-GM3; lanes 4-7: DNA samples from transgenic soybean plants not comprising elite event EE-GM3, but comprising the same herbicide tolerance genes (other transformation events); lane 8: DNA sample from wt soybean; lane 9: no template DNA control; lane 10: molecular weight marker.

10

15

20

Fig. 3: Schematic representation of the relationship between the cited nucleotide

sequences and primers for elite event EE-GM1. black bar: foreign DNA; hatched bar: DNA of plant origin; horizontally striped arrow (d): chimeric phosphinothricin acetyltransferase encoding gene (see SEQ ID No. 11 for composition of the chimeric gene); black arrows: oligonucleotide primers, the figures under the bars represent nucleotide positions; (c) refers to complement of the indicated nucleotide sequence; Note: the scheme is not drawn to scale.

25

Fig. 4: Schematic representation of the relationship between the cited nucleotide sequences

and primers for elite event EE-GM2. black bar: foreign DNA; hatched bar: DNA of plant origin; horizontally striped arrow (d): chimeric phosphinothricin acetyltransferase encoding gene (see SEQ ID No. 11 for composition of the chimeric gene; black arrows: oligonucleotide primers, the figures under the bars represent nucleotide positions; (c) refers to complement of the indicated nucleotide sequence; NA: not applicable. Note: the scheme is not drawn to scale.

25

30

Fig. 5: PCR Identification Protocol developed for EE-GM1. Loading sequence of the gel: Lane1: DNA sample from soybean plants comprising the transgenic event EE-GM1; lane

2: DNA sample from a transgenic soybean plant not comprising elite event EE-GM1;
lane 3: control DNA samples from wild-type soybean plants; lane 4: no template control;
lane 5: molecular weight marker.

5 **Fig. 6: PCR Identification Protocol developed for EE-GM2.** Loading sequence of the gel:
Lane 1: DNA sample from soybean plants comprising the transgenic event EE-GM2; lane
2: DNA sample from a transgenic soybean plant not comprising elite event EE-GM2;
lane 3: control DNA samples from wild-type soybean plants; lane 4: no template control;
lane 5: molecular weight marker.

10

Detailed Description of the Preferred Embodiments of the Invention

15 The incorporation of a recombinant DNA molecule in the plant genome typically results from transformation of a cell or tissue. The particular site of incorporation is usually due to random integration.

20 The DNA introduced into the plant genome as a result of transformation of a plant cell or tissue with a recombinant DNA or “transforming DNA”, and originating from such transforming DNA is hereinafter referred to as “foreign DNA” comprising one or more “transgenes”. The transgenes of EE-GM3 are the glyphosate and HPPD inhibitor herbicide tolerance genes. “Plant DNA” in the context of the present invention will refer to DNA originating from the plant which is transformed. Plant DNA will usually be found in the same genetic locus in the corresponding wild-type plant. The foreign DNA can be characterized by the location and the configuration at the site of incorporation of the recombinant DNA molecule in the plant genome. The site in the 25 plant genome where a recombinant DNA has been inserted is also referred to as the “insertion site” or “target site”. Insertion of the recombinant DNA into the region of the plant genome referred to as “pre-insertion plant DNA” can be associated with a deletion of plant DNA, referred to as “target site deletion”. A “flanking region” or “flanking sequence” as used herein refers to a sequence of at least 20 bp, preferably at least 50 bp, and up to 5000 bp of DNA different from 30 the introduced DNA, preferably DNA from the plant genome which is located either immediately upstream of and contiguous with or immediately downstream of and contiguous

with the foreign DNA. Transformation procedures leading to random integration of the foreign DNA will result in transformants with different flanking regions, which are characteristic and unique for each transformant. When the recombinant DNA is introduced into a plant through traditional crossing, its insertion site in the plant genome, or its flanking regions will generally 5 not be changed.

An “isolated nucleic acid (sequence)” or “isolated DNA (sequence)”, as used herein, refers to a nucleic acid or DNA (sequence) which is no longer in the natural environment it was isolated from, e.g., the nucleic acid sequence in another bacterial host or in a plant genome, or a nucleic 10 acid or DNA fused to DNA or nucleic acid from another origin, such as when contained in a chimeric gene under the control of a plant-expressible promoter.

An event is defined as a (artificial) genetic locus that, as a result of genetic engineering, carries a foreign DNA or transgene comprising at least one copy of a gene of interest or of the genes of 15 interest. The typical allelic states of an event are the presence or absence of the foreign DNA. An event is characterized phenotypically by the expression of the transgene. At the genetic level, an event is part of the genetic make-up of a plant. At the molecular level, an event can be characterized by the restriction map (e.g., as determined by Southern blotting), by the upstream and/or downstream flanking sequences of the transgene, the location of molecular markers 20 and/or the molecular configuration of the transgene. Usually transformation of a plant with a transforming DNA comprising at least one gene of interest leads to a population of transformants comprising a multitude of separate events, each of which is unique. An event is characterized by the foreign DNA and at least one of the flanking sequences.

25 An elite event, as used herein, is an event which is selected from a group of events, obtained by transformation with the same transforming DNA, based on the expression and stability of the transgene(s) and its compatibility with optimal agronomic characteristics of the plant comprising it. Thus the criteria for elite event selection are one or more, preferably two or more, advantageously all of the following:

a) that the presence of the foreign DNA does not compromise other desired characteristics of the plant, such as those relating to agronomic performance or commercial value;

5 b) that the event is characterized by a well defined molecular configuration which is stably inherited and for which appropriate tools for identity control can be developed;

c) that the gene(s) of interest show(s) a correct, appropriate and stable spatial and temporal phenotypic expression, both in heterozygous (or hemizygous) and homozygous condition of the event, at a commercially acceptable level in a range of environmental conditions in which the plants carrying the event are likely to be exposed in normal agronomic use.

10

It is preferred that the foreign DNA is associated with a position in the plant genome that allows easy introgression into desired commercial genetic backgrounds.

15

The status of an event as an elite event is confirmed by introgression of the elite event in different relevant genetic backgrounds and observing compliance with one, two or all of the criteria e.g. a), b) and c) above.

20

An “elite event” thus refers to a genetic locus comprising a foreign DNA, which meets the above-described criteria. A plant, plant material or progeny such as seeds can comprise one or more elite events in its genome.

25

The tools developed to identify an elite event or the plant or plant material comprising an elite event, or products which comprise plant material comprising the elite event, are based on the specific genomic characteristics of the elite event, such as, a specific restriction map of the genomic region comprising the foreign DNA, molecular markers or the sequence of the flanking region(s) of the foreign DNA.

30

Once one or both of the flanking regions of the foreign DNA have been sequenced, primers and probes can be developed which specifically recognize this (these) sequence(s) in the nucleic acid (DNA or RNA) of a sample by way of a molecular biological technique. For instance a PCR method can be developed to identify the elite event in biological samples (such as samples of

plants, plant material or products comprising plant material). Such a PCR is based on at least two specific “primers”, one recognizing a sequence within the 5’ or 3’ flanking region of the elite event and the other recognizing a sequence within the foreign DNA. The primers preferably have a sequence of between 15 and 35 nucleotides which under optimized PCR conditions 5 “specifically recognize” a sequence within the 5’ or 3’ flanking region of the elite event and the foreign DNA of the elite event respectively, so that a specific fragment (“integration fragment” or discriminating amplicon) is amplified from a nucleic acid sample comprising the elite event. This means that only the targeted integration fragment, and no other sequence in the plant genome or foreign DNA, is amplified under optimized PCR conditions.

10

PCR primers suitable for identification of EE-GM3 may be the following:

- oligonucleotides ranging in length from 17 nt to about 200 nt, comprising a nucleotide sequence of at least 17 consecutive nucleotides, preferably 20 consecutive nucleotides, selected from the plant DNA in the 5’ flanking sequence (SEQ ID No 2 from nucleotide 1 to 15 nucleotide 1451) at their 3’ end (primers recognizing 5’ flanking sequences); or
- oligonucleotides ranging in length from 17 nt to about 200 nt, comprising a nucleotide sequence of at least 17 consecutive nucleotides, preferably 20 consecutive nucleotides, selected from the plant DNA in the 3’ flanking sequence (complement of SEQ ID No 3 from nucleotide 241 to nucleotide 1408) at their 3’ end (primers recognizing 3’ flanking sequences); or
- oligonucleotides ranging in length from 17 nt to about 200 nt, comprising a nucleotide sequence of at least 17 consecutive nucleotides, preferably 20 consecutive nucleotides, selected from the inserted DNA sequences (complement of SEQ ID No 2 from nucleotide 1452 to nucleotide 1843) at their 3’ end (primers recognizing foreign DNA); or
- oligonucleotides ranging in length from 17 nt to about 200 nt, comprising a nucleotide sequence of at least 17 consecutive nucleotides, preferably 20 consecutive nucleotides, selected from the inserted DNA sequences (SEQ ID No 3 from nucleotide 1 to nucleotide 240); or
- suitable oligonucleotides ranging in length from 17 nt to about 200 nt, comprising a nucleotide sequence of at least 17 consecutive nucleotides, preferably 20 consecutive

nucleotides, selected from the nucleotide sequence of the inserted DNA fragment or its complement (SEQ ID No 1 or SEQ ID No 20 from nucleotide position 1452 to 16638).

The primers may of course be longer than the mentioned 17 consecutive nucleotides, and may, 5 e.g., be 20, 21, 30, 35, 50, 75, 100, 150, 200 nt long or even longer. The primers may entirely consist of nucleotide sequence selected from the mentioned nucleotide sequences of flanking sequences and foreign DNA sequences. However, the nucleotide sequence of the primers at their 5' end (i.e. outside of the 3'-located 17 consecutive nucleotides) is less critical. Thus, the 5' 10 sequence of the primers may comprise or consist of a nucleotide sequence selected from the flanking sequences or foreign DNA, as appropriate, but may contain several (e.g., 1, 2, 5, or 10) mismatches. The 5' sequence of the primers may even entirely be a nucleotide sequence unrelated to the flanking sequences or foreign DNA, such as, e.g., a nucleotide sequence representing one or more restriction enzyme recognition sites. Such unrelated sequences or flanking DNA sequences with mismatches should preferably be not longer than 100, more 15 preferably not longer than 50 or even 25 nucleotides.

Moreover, suitable primers may comprise, consist or consist essentially of a nucleotide sequence at their 3' end spanning the joining region between the plant DNA derived sequences and the foreign DNA sequences (located at nucleotides 1451-1452 in SEQ ID No 2 and nucleotides 240- 20 241 in SEQ ID No 3 for EE-GM3) provided the mentioned 3'-located 17 consecutive nucleotides are not derived exclusively from either the foreign DNA or plant-derived sequences in SEQ ID No 2 or 3.

It will also be immediately clear to the skilled artisan that properly selected PCR primer pairs 25 should also not comprise sequences complementary to each other.

For the purpose of the invention, the “complement of a nucleotide sequence represented in SEQ ID No: X” is the nucleotide sequence which can be derived from the represented nucleotide sequence by replacing the nucleotides with their complementary nucleotide according to 30 Chargaff’s rules (A↔T; G↔C) and reading the sequence in the 5' to 3' direction, i.e., in opposite direction of the represented nucleotide sequence.

Examples of suitable primers for EE-GM3 are the oligonucleotide sequences of SEQ ID No 5 (3' flanking sequence recognizing primer), SEQ ID No 4 (foreign DNA recognizing primer for use with a 3' flanking sequence recognizing primers), or SEQ ID No 7 (foreign DNA recognizing primer for use with a 3' flanking sequence recognizing primers).

Other examples of suitable oligonucleotide primers for EE-GM3 comprise at their 3' end the following sequences or consist (essentially) of such sequences:

a. 5' flanking sequence recognizing primers:

- 10 - the nucleotide sequence of SEQ ID No 2 from nucleotide 264 to nucleotide 283
- the nucleotide sequence of SEQ ID No 2 from nucleotide 266 to nucleotide 285
- the nucleotide sequence of SEQ ID No 2 from nucleotide 1240 to nucleotide 1259
- the nucleotide sequence of SEQ ID No 2 from nucleotide 265 to nucleotide 285
- the nucleotide sequence of SEQ ID No 2 from nucleotide 265 to nucleotide 283
- 15 - the nucleotide sequence of SEQ ID No 2 from nucleotide 1239 to nucleotide 1259
- the nucleotide sequence of SEQ ID No 2 from nucleotide 1241 to nucleotide 1259
- the nucleotide sequence of SEQ ID No 2 from nucleotide 1244 to nucleotide 1263
- the nucleotide sequence of SEQ ID No 2 from nucleotide 1248 to nucleotide 1267
- the nucleotide sequence of SEQ ID No 2 from nucleotide 1250 to nucleotide 1269
- 20 - the nucleotide sequence of SEQ ID No 2 from nucleotide 262 to nucleotide 279
- the nucleotide sequence of SEQ ID No 2 from nucleotide 263 to nucleotide 279
- the nucleotide sequence of SEQ ID No 2 from nucleotide 264 to nucleotide 285
- the nucleotide sequence of SEQ ID No 2 from nucleotide 266 to nucleotide 283
- the nucleotide sequence of SEQ ID No 2 from nucleotide 1238 to nucleotide 1259
- 25 - the nucleotide sequence of SEQ ID No 2 from nucleotide 1242 to nucleotide 1259
- the nucleotide sequence of SEQ ID No 2 from nucleotide 1243 to nucleotide 1263
- the nucleotide sequence of SEQ ID No 2 from nucleotide 1245 to nucleotide 1263
- the nucleotide sequence of SEQ ID No 2 from nucleotide 1247 to nucleotide 1267
- the nucleotide sequence of SEQ ID No 2 from nucleotide 1249 to nucleotide 1269
- 30 - the nucleotide sequence of SEQ ID No 2 from nucleotide 1249 to nucleotide 1267
- the nucleotide sequence of SEQ ID No 2 from nucleotide 263 to nucleotide 285

- the nucleotide sequence of SEQ ID No 2 from nucleotide 267 to nucleotide 283
- the nucleotide sequence of SEQ ID No 2 from nucleotide 1242 to nucleotide 1263
- the nucleotide sequence of SEQ ID No 2 from nucleotide 1243 to nucleotide 1259
- the nucleotide sequence of SEQ ID No 2 from nucleotide 1246 to nucleotide 1267
- 5 - the nucleotide sequence of SEQ ID No 2 from nucleotide 1246 to nucleotide 1263
- the nucleotide sequence of SEQ ID No 2 from nucleotide 1248 to nucleotide 1269
- the nucleotide sequence of SEQ ID No 2 from nucleotide 1250 to nucleotide 1271
- the nucleotide sequence of SEQ ID No 2 from nucleotide 1250 to nucleotide 1267
- the nucleotide sequence of SEQ ID No 2 from nucleotide 1241 to nucleotide 1263
- 10 - the nucleotide sequence of SEQ ID No 2 from nucleotide 1245 to nucleotide 1267
- the nucleotide sequence of SEQ ID No 2 from nucleotide 1247 to nucleotide 1269
- the nucleotide sequence of SEQ ID No 2 from nucleotide 1247 to nucleotide 1263
- the nucleotide sequence of SEQ ID No 2 from nucleotide 1249 to nucleotide 1271
- the nucleotide sequence of SEQ ID No 2 from nucleotide 1242 to nucleotide 1261
- 15 - the nucleotide sequence of SEQ ID No 2 from nucleotide 1241 to nucleotide 1261
- the nucleotide sequence of SEQ ID No 2 from nucleotide 1243 to nucleotide 1261
- the nucleotide sequence of SEQ ID No 2 from nucleotide 1240 to nucleotide 1261
- the nucleotide sequence of SEQ ID No 2 from nucleotide 1244 to nucleotide 1261
- the nucleotide sequence of SEQ ID No 2 from nucleotide 1239 to nucleotide 1261
- 20 - the nucleotide sequence of SEQ ID No 2 from nucleotide 1245 to nucleotide 1261

b. foreign DNA sequence recognizing primers for use with 5' flanking sequence

recognizing primers:

- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1732 to nucleotide 1751
- 25 - the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1735 to nucleotide 1754
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1731 to nucleotide 1750
- 30 - the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1732 to nucleotide 1750

- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1732 to nucleotide 1752
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1731 to nucleotide 1749
- 5 - the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1732 to nucleotide 1749
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1731 to nucleotide 1751
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1732 to 10 nucleotide 1753
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1731 to nucleotide 1748
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1732 to nucleotide 1748
- 15 - the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1735 to nucleotide 1751
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1731 to nucleotide 1752
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1732 to 20 nucleotide 1754
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1731 to nucleotide 1747
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1731 to nucleotide 1753
- 25 - the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1727 to nucleotide 1746
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1727 to nucleotide 1745
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1727 to 30 nucleotide 1747

- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1727 to nucleotide 1744
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1727 to nucleotide 1748
- 5 - the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1727 to nucleotide 1749
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1726 to nucleotide 1745
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1726 to nucleotide 1744
- 10 - the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1726 to nucleotide 1746
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1726 to nucleotide 1747
- 15 - the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1726 to nucleotide 1748
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1724 to nucleotide 1744
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1724 to nucleotide 1745
- 20 - the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1724 to nucleotide 1746
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1461 to nucleotide 1478
- 25 - the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1670 to nucleotide 1686
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1469 to nucleotide 1486
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1508 to nucleotide 1527

- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1667 to nucleotide 1686
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1670 to nucleotide 1687
- 5 - the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1673 to nucleotide 1689
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1688 to nucleotide 1704
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1688 to 10 nucleotide 1705
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1692 to nucleotide 1709
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1467 to nucleotide 1486
- 15 - the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1481 to nucleotide 1497
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1481 to nucleotide 1498
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1491 to 20 nucleotide 1507
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1491 to nucleotide 1508
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1672 to nucleotide 1688
- 25 - the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1673 to nucleotide 1690
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1673 to nucleotide 1691
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1688 to 30 nucleotide 1706

- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1691 to nucleotide 1707
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1691 to nucleotide 1708
- 5 - the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1469 to nucleotide 1487
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1481 to nucleotide 1499
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1489 to nucleotide 1505
- 10 - the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1489 to nucleotide 1506
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1489 to nucleotide 1507
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1489 to nucleotide 1508
- 15 - the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1666 to nucleotide 1686
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1667 to nucleotide 1687
- 20 - the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1670 to nucleotide 1688
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1672 to nucleotide 1689
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1688 to nucleotide 1707
- 25 - the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1691 to nucleotide 1709
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1692 to nucleotide 1710

- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1481 to nucleotide 1500
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1491 to nucleotide 1509
- 5 - the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1670 to nucleotide 1689
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1672 to nucleotide 1690
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1672 to 10 nucleotide 1691
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1687 to nucleotide 1705
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1687 to nucleotide 1706
- 15 - the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1691 to nucleotide 1710
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1472 to nucleotide 1488
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1488 to 20 nucleotide 1507
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1491 to nucleotide 1510
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1495 to nucleotide 1512
- 25 - the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1495 to nucleotide 1513
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1495 to nucleotide 1514
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1673 to 30 nucleotide 1692

- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1678 to nucleotide 1694
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1678 to nucleotide 1695
- 5 - the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1678 to nucleotide 1696
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1687 to nucleotide 1703
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1687 to 10 nucleotide 1704
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1692 to nucleotide 1711
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1469 to nucleotide 1488
- 15 - the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1488 to nucleotide 1506
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1491 to nucleotide 1511
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1670 to 20 nucleotide 1690
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1678 to nucleotide 1697
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1688 to nucleotide 1709
- 25 - the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1467 to nucleotide 1487
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1488 to nucleotide 1508
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1495 to 30 nucleotide 1511

- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1491 to nucleotide 1512
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1666 to nucleotide 1687
- 5 - the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1667 to nucleotide 1688
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1672 to nucleotide 1692
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1673 to 10 nucleotide 1693
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1687 to nucleotide 1707
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1472 to nucleotide 1490
- 15 - the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1472 to nucleotide 1491
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1481 to nucleotide 1501
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1489 to 20 nucleotide 1509
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1495 to nucleotide 1515
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1670 to nucleotide 1691
- 25 - the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1673 to nucleotide 1694
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1678 to nucleotide 1698
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1469 to 30 nucleotide 1489

- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1667 to nucleotide 1689
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1687 to nucleotide 1708
- 5 - the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1688 to nucleotide 1710
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1691 to nucleotide 1711
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1472 to 10 nucleotide 1492
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1489 to nucleotide 1510
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1666 to nucleotide 1688
- 15 - the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1687 to nucleotide 1709
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1692 to nucleotide 1712
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1467 to 20 nucleotide 1488
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1469 to nucleotide 1490
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1488 to nucleotide 1509
- 25 - the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1489 to nucleotide 1511
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1678 to nucleotide 1699
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1472 to 30 nucleotide 1493

- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1472 to nucleotide 1494
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1481 to nucleotide 1502
- 5 - the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1670 to nucleotide 1692
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1469 to nucleotide 1491
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1488 to 10 nucleotide 1510
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1691 to nucleotide 1712
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1692 to nucleotide 1713
- 15 - the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1692 to nucleotide 1714
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1467 to nucleotide 1489
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1678 to 20 nucleotide 1700
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1481 to nucleotide 1503
- the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1691 to nucleotide 1713

25

c. 3' flanking sequence recognizing primers:

- the complement of the nucleotide sequence of SEQ ID No 3 from nucleotide 828 to nucleotide 847
- the complement of the nucleotide sequence of SEQ ID No 3 from nucleotide 830 to 30 nucleotide 849

- the complement of the nucleotide sequence of SEQ ID No 3 from nucleotide 828 to nucleotide 846
- the complement of the nucleotide sequence of SEQ ID No 3 from nucleotide 828 to nucleotide 848
- 5 - the complement of the nucleotide sequence of SEQ ID No 3 from nucleotide 830 to nucleotide 848
- the complement of the nucleotide sequence of SEQ ID No 3 from nucleotide 830 to nucleotide 850
- the complement of the nucleotide sequence of SEQ ID No 3 from nucleotide 828 to 10 nucleotide 845
- the complement of the nucleotide sequence of SEQ ID No 3 from nucleotide 830 to nucleotide 847
- the complement of the nucleotide sequence of SEQ ID No 3 from nucleotide 828 to nucleotide 849
- 15 - the complement of the nucleotide sequence of SEQ ID No 3 from nucleotide 830 to nucleotide 851
- the complement of the nucleotide sequence of SEQ ID No 3 from nucleotide 828 to nucleotide 844
- the complement of the nucleotide sequence of SEQ ID No 3 from nucleotide 830 to 20 nucleotide 846
- the complement of the nucleotide sequence of SEQ ID No 3 from nucleotide 828 to nucleotide 850
- the complement of the nucleotide sequence of SEQ ID No 3 from nucleotide 830 to nucleotide 852
- 25 - the complement of the nucleotide sequence of SEQ ID No 3 from nucleotide 992 to nucleotide 1009
- the complement of the nucleotide sequence of SEQ ID No 3 from nucleotide 731 to nucleotide 752
- the complement of the nucleotide sequence of SEQ ID No 3 from nucleotide 776 to 30 nucleotide 795

- the complement of the nucleotide sequence of SEQ ID No 3 from nucleotide 731 to nucleotide 753
- the complement of the nucleotide sequence of SEQ ID No 3 from nucleotide 776 to nucleotide 794
- 5 - the complement of the nucleotide sequence of SEQ ID No 3 from nucleotide 776 to nucleotide 796
- the complement of the nucleotide sequence of SEQ ID No 3 from nucleotide 776 to nucleotide 793
- the complement of the nucleotide sequence of SEQ ID No 3 from nucleotide 776 to nucleotide 797
- 10 - the complement of the nucleotide sequence of SEQ ID No 3 from nucleotide 776 to nucleotide 792
- the complement of the nucleotide sequence of SEQ ID No 3 from nucleotide 776 to nucleotide 798
- 15 - the complement of the nucleotide sequence of SEQ ID No 3 from nucleotide 733 to nucleotide 752
- the complement of the nucleotide sequence of SEQ ID No 3 from nucleotide 733 to nucleotide 753
- the complement of the nucleotide sequence of SEQ ID No 3 from nucleotide 733 to nucleotide 754
- 20 - the complement of the nucleotide sequence of SEQ ID No 3 from nucleotide 733 to nucleotide 755
- the complement of the nucleotide sequence of SEQ ID No 3 from nucleotide 838 to nucleotide 854
- 25 - the complement of the nucleotide sequence of SEQ ID No 3 from nucleotide 246 to nucleotide 263
- the complement of the nucleotide sequence of SEQ ID No 3 from nucleotide 838 to nucleotide 855
- the complement of the nucleotide sequence of SEQ ID No 3 from nucleotide 245 to nucleotide 264

81722251

d. foreign DNA sequence recognizing primers for use with 3' flanking sequence recognizing primers:

- the nucleotide sequence of SEQ ID No 3 from nucleotide 173 to nucleotide 192
- the nucleotide sequence of SEQ ID No 3 from nucleotide 22 to nucleotide 41
- 5 - the nucleotide sequence of SEQ ID No 3 from nucleotide 172 to nucleotide 192
- the nucleotide sequence of SEQ ID No 3 from nucleotide 174 to nucleotide 192
- the nucleotide sequence of SEQ ID No 3 from nucleotide 191 to nucleotide 210
- the nucleotide sequence of SEQ ID No 3 from nucleotide 171 to nucleotide 192
- the nucleotide sequence of SEQ ID No 3 from nucleotide 175 to nucleotide 192
- 10 - the nucleotide sequence of SEQ ID No 3 from nucleotide 190 to nucleotide 210
- the nucleotide sequence of SEQ ID No 3 from nucleotide 192 to nucleotide 210
- the nucleotide sequence of SEQ ID No 3 from nucleotide 176 to nucleotide 192
- the nucleotide sequence of SEQ ID No 3 from nucleotide 189 to nucleotide 210
- the nucleotide sequence of SEQ ID No 3 from nucleotide 193 to nucleotide 210
- 15 - the nucleotide sequence of SEQ ID No 3 from nucleotide 188 to nucleotide 210
- the nucleotide sequence of SEQ ID No 3 from nucleotide 194 to nucleotide 210
- the nucleotide sequence of SEQ ID No 3 from nucleotide 199 to nucleotide 218
- the nucleotide sequence of SEQ ID No 3 from nucleotide 200 to nucleotide 218
- the nucleotide sequence of SEQ ID No 3 from nucleotide 197 to nucleotide 218
- 20 - the nucleotide sequence of SEQ ID No 3 from nucleotide 201 to nucleotide 218
- the nucleotide sequence of SEQ ID No 3 from nucleotide 201 to nucleotide 220
- the nucleotide sequence of SEQ ID No 3 from nucleotide 200 to nucleotide 220
- the nucleotide sequence of SEQ ID No 3 from nucleotide 199 to nucleotide 220
- the nucleotide sequence of SEQ ID No 3 from nucleotide 200 to nucleotide 221
- 25 - the nucleotide sequence of SEQ ID No 3 from nucleotide 199 to nucleotide 221
- the nucleotide sequence of SEQ ID No 3 from nucleotide 150 to nucleotide 172

PCR primers suitable for the identification of EE-GM1 have been described in WO2006/108674, particularly on page 8, line 4 to page 26, line 7.

30

81722251

PCR primers suitable for the identification of EE-GM2 have been described in WO2006/108675, particularly on pages 8, line 4 to page 33, line 4.

As used herein, "the nucleotide sequence of SEQ ID No. Z from position X to position Y" 5 indicates the nucleotide sequence including both nucleotide endpoints.

Preferably, the amplified fragment has a length of between 50 and 500 nucleotides, such as a length between 100 and 350 nucleotides. The specific primers may have a sequence which is between 80 and 100% identical to a sequence within the 5' or 3' flanking region of the elite 10 event and the foreign DNA of the elite event, respectively, provided the mismatches still allow specific identification of the elite event with these primers under optimized PCR conditions. The range of allowable mismatches however, can easily be determined experimentally and are known to a person skilled in the art.

15 Detection of integration fragments can occur in various ways, e.g., via size estimation after gel analysis. The integration fragments may also be directly sequenced. Other sequence specific methods for detection of amplified DNA fragments are also known in the art.

As the sequence of the primers and their relative location in the genome are unique for the elite 20 event, amplification of the integration fragment will occur only in biological samples comprising (the nucleic acid of) the elite event. Preferably when performing a PCR to identify the presence of elite events EE-GM3 and EE-GM1 or elite events EE-GM3 and EE-GM2 in unknown samples, a control is included of a set of primers with which a fragment within a "housekeeping 25 gene" of the plant species of the event can be amplified. Housekeeping genes are genes that are expressed in most cell types and which are concerned with basic metabolic activities common to all cells. Preferably, the fragment amplified from the housekeeping gene is a fragment which is larger than the amplified integration fragment. Depending on the samples to be analyzed, other controls can be included.

30 Standard PCR protocols are described in the art, such as in 'PCR Applications Manual' (Roche Molecular Biochemicals, 2nd Edition, 1999) and other references. The optimal conditions for

the PCR, including the sequence of the specific primers, are specified in a “PCR (or Polymerase Chain Reaction) Identification Protocol” for each elite event. It is however understood that a number of parameters in the PCR Identification Protocol may need to be adjusted to specific laboratory conditions, and may be modified slightly to obtain similar results. For instance, use of
5 a different method for preparation of DNA may require adjustment of, for instance, the amount of primers, polymerase and annealing conditions used. Similarly, the selection of other primers may dictate other optimal conditions for the PCR Identification Protocol. These adjustments will however be apparent to a person skilled in the art, and are furthermore detailed in current PCR application manuals such as the one cited above.

10

Alternatively, specific primers can be used to amplify integration fragments that can be used as “specific probes” for identifying EE-GM3 and EE-GM1 or EE-GM3 and EE-GM2 in biological samples. Contacting nucleic acid of a biological sample, with the probes, under conditions which allow hybridization of the probes with their corresponding fragments in the sample nucleic acid,
15 results in the formation of nucleic acid/probe hybrids. The formation of these hybrids can be detected (e.g. via labeling of the nucleic acid or probe), whereby the formation of these hybrids indicates the presence of EE-GM3 and EE-GM1 or EE-GM3 and EE-GM2. Such identification methods based on hybridization with a specific probe (either on a solid phase carrier or in solution) have been described in the art. The specific probe is preferably a sequence which,
20 under optimized conditions, hybridizes specifically to a region within the 5' or 3' flanking region of the elite event and preferably also comprising part of the foreign DNA contiguous therewith (hereinafter referred to as “specific region”). Preferably, the specific probe comprises a sequence of between 50 and 500 bp, preferably of 100 to 350 bp which is at least 80%, preferably between 80 and 85%, more preferably between 85 and 90%, especially preferably between 90 and 95%,
25 most preferably between 95% and 100% identical (or complementary) to the nucleotide sequence of a specific region. Preferably, the specific probe will comprise a sequence of about 15 to about 100 contiguous nucleotides identical (or complementary) to a specific region of the elite event.

Furthermore, detection methods specific for elite events EE-GM3 and EE-GM1 or for elite
30 events EE-GM3 and EE-GM2 which differ from PCR based amplification methods can also be developed using the elite event specific sequence information provided herein. Such alternative

81722251

detection methods include linear signal amplification detection methods based on invasive cleavage of particular nucleic acid structures, also known as Invader™ technology, (as described e.g. in US patent 5,985,557 "Invasive Cleavage of Nucleic Acids", 6,001,567 "Detection of Nucleic Acid sequences by Invader Directed Cleavage").

5 For EE-GM3 detection by this method, the target sequence may hybridized with a labeled first nucleic acid oligonucleotide comprising the nucleotide sequence of SEQ ID No 2 from nucleotide 1452 to nucleotide 1469 or its complement or said labeled nucleic acid probe comprising the nucleotide sequence of SEQ ID No 3 from nucleotide 223 to nucleotide 240 or its complement and is further hybridized with a second nucleic acid oligonucleotide comprising the 10 nucleotide sequence of SEQ ID No 2 from nucleotide 1434 to nucleotide 1451 or its complement or said labeled nucleic acid probe comprising the nucleotide sequence of SEQ ID No 3 from nucleotide 241 to nucleotide 258 or its complement, wherein the first and second oligonucleotide overlap by at least one nucleotide. The duplex or triplex structure which is produced by this hybridization allows selective probe cleavage with an enzyme (Cleavase®) 15 leaving the target sequence intact. The cleaved labeled probe is subsequently detected, potentially via an intermediate step resulting in further signal amplification. For EE-GM1 detection by this method, the target sequence may hybridized with a labeled first nucleic acid oligonucleotide comprising the nucleotide sequence of SEQ ID No 12 from nucleotide 210 to nucleotide 227 or its complement or said labeled nucleic acid probe comprising the nucleotide 20 sequence of SEQ ID No 13 from nucleotide 561 to nucleotide 568 or its complement and is further hybridized with a second nucleic acid oligonucleotide comprising the nucleotide sequence of SEQ ID No 12 from nucleotide 192 to nucleotide 209 or its complement or said labeled nucleic acid probe comprising the nucleotide sequence of SEQ ID No 13 from nucleotide 569 to nucleotide 586 or its complement, wherein the first and second oligonucleotide overlap 25 by at least one nucleotide. The duplex or triplex structure which is produced by this hybridization allows selective probe cleavage with an enzyme (Cleavase®) leaving the target sequence intact. The cleaved labeled probe is subsequently detected, potentially via an intermediate step resulting in further signal amplification. For EE-GM2 detection by this method, the target sequence may hybridized with a labeled first nucleic acid oligonucleotide comprising the nucleotide sequence 30 of SEQ ID No 14 from nucleotide 312 to nucleotide 329 or its complement or said labeled nucleic acid probe comprising the nucleotide sequence of SEQ ID No 15 from nucleotide 490 to

nucleotide 507 or its complement and is further hybridized with a second nucleic acid oligonucleotide comprising the nucleotide sequence of SEQ ID No 14 from nucleotide 294 to nucleotide 311 or its complement or said labeled nucleic acid probe comprising the nucleotide sequence of SEQ ID No 15 from nucleotide 508 to nucleotide 525 or its complement, wherein 5 the first and second oligonucleotide overlap by at least one nucleotide. The duplex or triplex structure which is produced by this hybridization allows selective probe cleavage with an enzyme (Cleavase®) leaving the target sequence intact. The cleaved labeled probe is subsequently detected, potentially via an intermediate step resulting in further signal amplification.

10

A “kit” as used herein refers to a set of reagents for the purpose of performing the method of the invention, more particularly, the identification of the elite event EE-GM3 in biological samples or the determination of the zygosity status of EE-GM3 containing plant material. More particularly, a preferred embodiment of the kit of the invention comprises at least one or two specific primers, as described above for identification of the elite event, or three specific primers for the determination of the zygosity status. Optionally, the kit can further comprise any other reagent described herein in the PCR Identification Protocol. Alternatively, according to another embodiment of this invention, the kit can comprise a specific probe, as described above, which specifically hybridizes with nucleic acid of biological samples to identify the presence of EE- 15 GM3 therein. Optionally, the kit can further comprise any other reagent (such as but not limited to hybridizing buffer, label) for identification of EE-GM3 in biological samples, using the specific probe.

The kit of the invention can be used, and its components can be specifically adjusted, for 20 purposes of quality control (e.g., purity of seed lots), detection of the presence or absence of the elite event in plant material or material comprising or derived from plant material, such as but not limited to food or feed products.

As used herein, “sequence identity” with regard to nucleotide sequences (DNA or RNA), refers 30 to the number of positions with identical nucleotides divided by the number of nucleotides in the shorter of the two sequences. The alignment of the two nucleotide sequences is performed by the

Wilbur and Lipmann algorithm (Wilbur and Lipmann, 1983, Proc. Nat. Acad. Sci. USA 80:726) using a window-size of 20 nucleotides, a word length of 4 nucleotides, and a gap penalty of 4. Computer-assisted analysis and interpretation of sequence data, including sequence alignment as described above, can, e.g., be conveniently performed using the sequence analysis software 5 package of the Genetics Computer Group (GCG, University of Wisconsin Biotechnology Center). Sequences are indicated as “essentially similar” when such sequences have a sequence identity of at least about 75%, particularly at least about 80%, more particularly at least about 85%, quite particularly at least about 90%, especially at least about 95%, more especially at least about 98 %, or at least about 99 %. It is clear that when RNA sequences are said to be essentially 10 similar or have a certain degree of sequence identity with DNA sequences, thymidine (T) in the DNA sequence is considered equal to uracil (U) in the RNA sequence. Also, it is clear that small differences or mutations may appear in DNA sequences over time and that some mismatches can be allowed for the event-specific primers or probes of the invention, so any DNA sequence indicated herein in any embodiment of this invention for any 3' or 5' flanking DNA or for any 15 insert or foreign DNA or any primer or probe of this invention, also includes sequences essentially similar to the sequences provided herein, such as sequences hybridizing to or with at least 90 %, 95 %, 96 %, 97 %, 98 %, or at least 99 % sequence identity to the sequence given for any 3' or 5' flanking DNA, for any primer or probe or for any insert or foreign DNA of this invention.

20

The term “primer” as used herein encompasses any nucleic acid that is capable of priming the synthesis of a nascent nucleic acid in a template-dependent process, such as PCR. Typically, primers are oligonucleotides from 10 to 30 nucleotides, but longer sequences can be employed. Primers may be provided in double-stranded form, though the single-stranded form is preferred. 25 Probes can be used as primers, but are designed to bind to the target DNA or RNA and need not be used in an amplification process.

The term “recognizing” as used herein when referring to specific primers, refers to the fact that the specific primers specifically hybridize to a nucleic acid sequence in the elite event under the 30 conditions set forth in the method (such as the conditions of the PCR Identification Protocol), whereby the specificity is determined by the presence of positive and negative controls.

The term “hybridizing” as used herein when referring to specific probes, refers to the fact that the probe binds to a specific region in the nucleic acid sequence of the elite event under standard stringency conditions. Standard stringency conditions as used herein refers to the conditions for 5 hybridization described herein or to the conventional hybridizing conditions as described by Sambrook et al., 1989 (Molecular Cloning: A Laboratory Manual, Second Edition, Cold Spring Harbor Laboratory Press, NY) which for instance can comprise the following steps: 1) immobilizing plant genomic DNA fragments on a filter, 2) prehybridizing the filter for 1 to 2 hours at 42°C in 50% formamide, 5 X SSPE, 2 X Denhardt's reagent and 0.1% SDS, or for 1 to 10 2 hours at 68°C in 6 X SSC, 2 X Denhardt's reagent and 0.1% SDS, 3) adding the hybridization probe which has been labeled, 4) incubating for 16 to 24 hours, 5) washing the filter for 20 min. at room temperature in 1X SSC, 0.1 %SDS, 6) washing the filter three times for 20 min. each at 68°C in 0.2 X SSC, 0.1 %SDS, and 7) exposing the filter for 24 to 48 hours to X-ray film at -70°C with an intensifying screen.

15

As used in herein, a biological sample is a sample of a plant, plant material or products comprising plant material. The term “plant” is intended to encompass soybean (*Glycine max*) plant tissues, at any stage of maturity, as well as any cells, tissues, or organs taken from or derived from any such plant, including without limitation, any seeds, leaves, stems, flowers, 20 roots, single cells, gametes, cell cultures, tissue cultures or protoplasts. “Plant material”, as used herein refers to material which is obtained or derived from a plant. Products comprising plant material relate to food, feed or other products which are produced using plant material or can be contaminated by plant material. It is understood that, in the context of the present invention, such biological samples are tested for the presence of nucleic acids specific for EE-GM3, EE-GM1, 25 and EE-GM2 implying the presence of nucleic acids in the samples. Thus the methods referred to herein for identifying elite event EE-GM3 and EE-GM2 or EE-GM3 and EE-GM1 in biological samples, relate to the identification in biological samples of nucleic acids which comprise the elite event.

30

As used herein “comprising” is to be interpreted as specifying the presence of the stated features, integers, steps, reagents or components as referred to, but does not preclude the presence or

addition of one or more features, integers, steps or components, or groups thereof. Thus, e.g., a nucleic acid or protein comprising a sequence of nucleotides or amino acids, may comprise more nucleotides or amino acids than the actually cited ones, i.e., be embedded in a larger nucleic acid or protein. A chimeric gene comprising a DNA sequence which is functionally or structurally defined, may comprise additional DNA sequences, such as promoter and transcript termination sequences.

The present invention also relates to the development of a stack of elite event EE-GM3 and elite event EE-GM1 or a stack of elite event EE-GM3 and elite event EE-GM2 in soybean, to the plants comprising a stack of these events, the progeny obtained from these plants and to the plant cells, or plant material derived from plants comprising these stacks. Plants comprising elite event EE-GM3 and EE-GM1 or EE-GM3 and EE-GM2 can be obtained as described in example 1. Stacks are obtained by crossing plants comprising single events using conventional breeding methods and identification of progeny thereof comprising two different events.

Soybean plants or plant material comprising EE-GM3 and EE-GM1 can be identified according to the PCR Identification Protocol described for EE-GM3 and EE-GM1 in Example 2. Briefly, soybean genomic DNA present in the biological sample is amplified by PCR using a primer which specifically recognizes a sequence within the 5' or 3' flanking sequence of EE-GM3 such as the primer with the sequence of SEQ ID NO: 5, and a primer which recognizes a sequence in the foreign DNA, such as the primer with the sequence of SEQ ID NO: 4 and further using a primer which specifically recognizes a sequence within the 5' or 3' flanking sequence of EE-GM1 such as the primer with the sequence of SEQ ID NO: 16, and a primer which recognizes a sequence in the foreign DNA, such as the primer with the sequence of SEQ ID NO: 17.

Soybean plants or plant material comprising EE-GM3 and EE-GM2 can be identified according to the PCR Identification Protocol described for EE-GM3 and EE-GM2 in Example 2. Briefly, soybean genomic DNA present in the biological sample is amplified by PCR using a primer which specifically recognizes a sequence within the 5' or 3' flanking sequence of EE-GM3 such as the primer with the sequence of SEQ ID NO: 5, and a primer which recognizes a sequence in the foreign DNA, such as the primer with the sequence of SEQ ID NO: 4 and further using a

primer which specifically recognizes a sequence within the 5' or 3' flanking sequence of EE-GM2 such as the primer with the sequence of SEQ ID NO: 18, and a primer which recognizes a sequence in the foreign DNA, such as the primer with the sequence of SEQ ID NO: 19.

5 DNA primers which amplify part of an endogenous soybean sequence are used as positive control for the PCR amplification. If upon PCR amplification, the material yields the fragments of the expected sizes, the material contains plant material from a soybean plant harboring elite event EE-GM3 and EE-GM1 or from a soybean plant harboring elite event EE-GM3 and EE-GM2.

10 Plants harboring EE-GM3 and EE-GM1 or EE-GM3 and EE-GM2 are characterized by their glyphosate tolerance, as well as by their tolerance to HPPD inhibitors such as isoxaflutol and further by their tolerance to glufosinate. Plants harboring the event stacks are also characterized by having agronomical characteristics that are comparable to commercially available varieties of 15 soybean, in the absence of herbicide application. It has been observed that the presence of foreign DNA in the insertion regions of the soybean plant genome described herein, confers particularly interesting phenotypic and molecular characteristics to the plants comprising this event.

20 One embodiment of this invention provides a combination or elite events EE-GM3 and EE-GM1 and/or EE-GM2 in soybean plants, obtainable by insertion of transgenes at specific locations in the soybean genome, which elite events confers tolerance to glyphosate, glufosinate and an HPPD inhibitor herbicide such as isoxaflutole on such soybean plants, and wherein such elite events do not cause any effect on the agronomic performance of such soybeans negatively 25 affecting the yield of such soybean plants, compared to isogenic lines (as used herein, "isogenic lines" or "near-isogenic lines" are soybean lines of the same genetic background but lacking the transgenes, such as plants of the same genetic background as the plant used for transformation, or segregating sister lines having lost the transgenes). Particularly, the current invention provides a combination of elite events EE-GM3 and EE-GM1 and/or EE-GM2 in soybean plants, 30 wherein the insertion or presence of said elite event in the genome of such soybean plants does not cause an increased susceptibility to disease, does not cause a yield drag, or does not cause

increased lodging, in such soybean plants, as compared to isogenic lines. Hence, the current invention provides a combination of elite events in soybean plants, designated as EE-GM3 and EE-GM1 and/or EE-GM2, which results in soybean plants that can tolerate the application of glyphosate, glufosinate and an HPPD inhibitor herbicide (either simultaneously or separately) without negatively affecting the yield of said soybean plants compared to isogenic lines, which soybean plants have no statistically significant difference in their disease susceptibility, or lodging, compared to isogenic soybean plants. These characteristics make the current combination of elite events very interesting to control glyphosate-resistant weeds in soybean fields, and can also be used in approaches to prevent or delay further glyphosate resistance development in soybean fields (e.g., by application of glyphosate and isoxaflutole and/or glufosinate, or by application of isoxaflutole and glyphosate and/or glufosinate, or by application of glufosinate and glyphosate and/or isoxafulote, securing at least 2 or even 3 different modes of actions of herbicides applied on a soybean field).

Provided herein is also a soybean plant or part thereof comprising event EE-GM3 and elite event EE-GM1 or EE-GM2, wherein representative soybean seed comprising event EE-GM3 has been deposited under NCIMB accession number 41659, representative soybean seed comprising elite event EE-GM1 has been deposited at the NCIMB under accession number NCIMB 41658, representative seed comprising elite event EE-GM2 has been deposited at the NCIMB under accession number NCIMB 41660, representative soybean seed comprising event EE-GM3 and EE-GM1 has been deposited at the ATCC under accession number PTA-11041, and representative soybean seed comprising event EE-GM3 and EE-GM2 has been deposited at the ATCC under accession number PTA-11042.

Soybean plants or parts thereof comprising EE-GM3 and EE-GM1 or EE-GM3 and EE-GM2 may be obtained by combining the respective elite events as can be found in the respective deposited seeds through any means available in the art, including by crossing plants from the deposited seeds, collecting the progeny thereof, and identifying those progeny plants comprising the appropriate combination of elite events. Further provided herein are seeds of such plants, comprising such events, as well as a soybean product produced from such seeds, wherein said soybean product comprises event EE-GM3 and EE-GM1 or EE-GM2. Such soybean product

can be or can comprise meal, ground seeds, flour, flakes, etc.. Particularly, such soybean product comprises a nucleic acid that produces amplicons diagnostic for event EE-GM3 and elite event EE-GM1 or EE-GM2, such amplicons comprising SEQ ID No. 2 or 3, SEQ ID No. 14 or 15 and/or SEQ ID No. 12 or 13. Also provided herein is a method for producing a soybean product, 5 comprising obtaining soybean seed comprising event EE-GM3 and elite event EE-GM1 or EE-GM2, and producing such soybean product therefrom.

Also provided herein is a soybean plant, which is progeny of any of the above soybean plants, and which comprises event EE-GM3 and EE-GM1 or EE-GM2.

10

Further provided herein is a method for producing a soybean plant tolerant to glyphosate and/or glufosinate and/or isoxaflutole herbicides, comprising introducing into the genome of such plant event EE-GM3 and event EE-GM1 or EE-GM2, particularly by crossing a first soybean plant containing event EE-GM3 with a soybean plant comprising EE-GM1 and/or EE-GM2, and 15 selecting a progeny plant tolerant to glyphosate and/or glufosinate and/or isoxaflutole.

Also provided herein is a glyphosate and glufosinate and/or isoxaflutole tolerant plant, particularly without yield drag, and with acceptable agronomical characteristics, comprising a 2mEPSPS, HPPD and PAT protein, and capable of producing an amplicon diagnostic for events 20 EE-GM3 and EE-GM1 or EE-GM3 and EE-GM2.

Further provided herein is a method for controlling weeds in a field of soybean plants comprising events EE-GM3 and EE-GM1 or EE-GM3 and EE-GM2, or a field to be planted with such soybean plants, comprising treating the field with an effective amount of an isoxaflutole-based, 25 glyphosate-based and/or glufosinate-based herbicide, wherein such plants are tolerant to such herbicide(s).

Further provided herein is a soybean plant, cell, tissue or seed, comprising EE-GM3 and EE-GM1, characterized by comprising in the genome of its cells a nucleic acid sequence with at least 30 80%, 90%, 95 % or 100 % sequence identity to SEQ ID No. 2 from nucleotide 1431 to 1472 and a nucleic acid sequence with at least 80%, 90%, 95 % or 100 % sequence identity to SEQ ID No.

3 from nucleotide 220 to 261, or the complement of said sequences, and also a nucleic acid sequence with at least 80%, 90%, 95 % or 100 % sequence identity to SEQ ID No. 12 from nucleotide 199 to 220 and a nucleic acid sequence with at least 80%, 90%, 95 % or 100 % sequence identity to SEQ ID No. 13 from nucleotide 558 to 579, or the complement of said
5 sequences.

Also provided herein is a soybean plant, cell, tissue or seed, comprising EE-GM3 and EE-GM2, characterized by comprising in the genome of its cells a nucleic acid sequence with at least 80%, 90%, 95 % or 100 % sequence identity to SEQ ID No. 2 from nucleotide 1431 to 1472 and a
10 nucleic acid sequence with at least 80%, 90%, 95 % or 100 % sequence identity to SEQ ID No. 3 from nucleotide 220 to 261, or the complement of said sequences, and also a nucleic acid sequence with at least 80%, 90%, 95 % or 100 % sequence identity to SEQ ID No. 14 from nucleotide 301 to 322 and a nucleic acid sequence with at least 80%, 90%, 95 % or 100 % sequence identity to SEQ ID No. 15 from nucleotide 497 to 518, or the complement of said
15 sequences.

The term “isoxaflutole”, as used herein, refers to the herbicide isoxaflutole [i.e.(5-cyclopropyl-4-isoxazolyl)[2-(methylsulfonyl)-4-(trifluoromethyl)phenyl]methanone], the active metabolite thereof, diketonitrile, and any mixtures or solutions comprising said compounds. HPPD
20 inhibiting herbicides useful for application on the plants comprising the events of this invention are the diketonitriles, e.g. 2-cyano-3-cyclopropyl-1-(2-methylsulphonyl-4-trifluoromethylphenyl)-propane-1,3-dione and 2-cyano-1-[4-(methylsulphonyl)-2-trifluoromethylphenyl]-3-(1-methylcyclopropyl)propane-1,3-dione; other isoxazoles; and the pyrazolinates, e.g. topramezone [i.e.[3-(4,5-dihydro-3-isoxazolyl)-2-methyl-4-(methylsulfonyl)phenyl](5-hydroxy-1-methyl-1H-pyrazol-4-yl)methanone], and pyrasulfotole [(5-hydroxy-1,3-dimethylpyrazol-4-yl)(2-mesyl-4-trifluoromethylphenyl) methanone]; or pyrazofen [2-[4-(2,4-dichlorobenzoyl)-1,3-dimethylpyrazol-5-yloxy]acetophenone].

In one embodiment of this invention, a field to be planted with soybean plants containing the EE-
30 GM3 event, can be treated with an HPPD inhibitor herbicide, such as isoxaflutole ('IFT'), before the soybean plants are planted or the seeds are sown, which cleans the field of weeds that are

killed by the HPPD inhibitor, allowing for no-till practices, followed by planting or sowing of the soybeans in that same pre-treated field later on (burndown application using an HPPD inhibitor herbicide). The residual activity of IFT will also protect the emerging and growing soybean plants from competition by weeds in the early growth stages. Once the soybean plants 5 have a certain size, and weeds tend to re-appear, glyphosate, or an HPPD inhibitor-glyphosate mixture, can be applied as post-emergent herbicide over the top of the plants.

In another embodiment of this invention, a field in which seeds containing the EE-GM3 event were sown, can be treated with an HPPD inhibitor herbicide, such as IFT, before the soybean 10 plants emerge but after the seeds are sown (the field can be made weed-free before sowing using other means, typically conventional tillage practices such as ploughing, chissel ploughing, or seed bed preparation), where residual activity will keep the field free of weeds killed by the herbicide so that the emerging and growing soybean plants have no competition by weeds (pre-emergence application of an HPPD inhibitor herbicide). Once the soybean plants have a certain 15 size, and weeds tend to re-appear, glyphosate - or an HPPD inhibitor-glyphosate mixture - can be applied as post-emergent herbicide over the top of the plants.

In another embodiment of this invention, plants containing the EE-GM3 event, can be treated with an HPPD inhibitor herbicide, such as IFT, over the top of the soybean plants (that have 20 emerged from the seeds that were sown), which cleans the field of weeds killed by the HPPD inhibitor, which application can be together with (e.g., in a spray tank mix), followed by or preceded by a treatment with glyphosate as post-emergent herbicide over the top of the plants (post-emergence application of an HPPD inhibitor herbicide (with or without glyphosate)).

25 Also, in accordance with the current invention, soybean plants harboring EE-GM3 and EE-GM1 or EE-GM2 may be treated with the following insecticides, herbicides or fungicides or soybean seeds harboring EE-GM3 and EE-GM1 or EE-GM2 may be coated with a seed coating comprising the following insecticides, herbicides or fungicides:

Soybean Herbicides:

Alachlor, Bentazone, Trifluralin, Chlorimuron-Ethyl, Cloransulam-Methyl, Fenoxaprop, Fomesafen, Fluazifop, Glyphosate, Imazamox, Imazaquin, Imazethapyr, (S)-Metolachlor, Metribuzin, Pendimethalin, Tepraloxydim, Isoxaflutole, Glufosinate.

Soybean Insecticides:

5 Lambda-cyhalothrin, Methomyl, Parathion, Thiocarb, Imidacloprid, Clothianidin, Thiamethoxam, Thiacloprid, Acetamiprid, Dinetofuran, Flubendiamide, Rynaxypyr, Cyazypyr, Spinosad, Spinotoram, Emamectin-Benzoate, Fipronil, Ethiprole, Deltamethrin, β -Cyfluthrin, gamma and lambda Cyhalothrin, 4-[(6-Chlorpyridin-3-yl)methyl](2,2-difluorethyl)amino]furan-2(5H)-on, Spirotetramat, Spinodiclofen, Triflumuron, Flonicamid, Thiodicarb, beta-Cyfluthrin.

10 Soybean Fungicides:

Azoxystrobin, Cyproconazole, Epoxiconazole, Flutriafol, Pyraclostrobin, Tebuconazole, Trifloxystrobin, Prothioconazole, Tetraconazole.

15 The following examples describe the identification of elite events EE-GM3, EE-GM1 and EE-GM2 and of plants containing a stack of event EE-GM3 with EE-GM1 or EE-GM3 with EE-GM2 and the development of tools for the specific identification of elite event EE-GM3, EE-GM1 or EE-GM2 and stacks thereof in biological samples.

20 Unless stated otherwise in the Examples, all recombinant techniques are carried out according to standard protocols as described in "Sambrook J and Russell DW (eds.) (2001) Molecular Cloning: A Laboratory Manual, 3rd Edition, Cold Spring Harbor Laboratory Press, New York" and in "Ausubel FA, Brent R, Kingston RE, Moore DD, Seidman JG, Smith JA and Struhl K (eds.) (2006) Current Protocols in Molecular Biology. John Wiley & Sons, New York".

25 Standard materials and references are described in "Croy RDD (ed.) (1993) Plant Molecular Biology LabFax, BIOS Scientific Publishers Ltd., Oxford and Blackwell Scientific Publications, Oxford" and in "Brown TA, (1998) Molecular Biology LabFax, 2nd Edition, Academic Press, San Diego". Standard materials and methods for polymerase chain reactions (PCR) can be found in "McPherson MJ and Møller SG (2000) PCR (The Basics), BIOS Scientific Publishers Ltd., Oxford" and in "PCR Applications Manual, 3rd Edition (2006), Roche Diagnostics GmbH, Mannheim or www.roche-applied-science.com".

It should be understood that a number of parameters in any lab protocol such as the PCR protocols in the below Examples may need to be adjusted to specific laboratory conditions, and may be modified slightly to obtain similar results. For instance, use of a different method for preparation of DNA or the selection of other primers in a PCR method may dictate other optimal conditions for the PCR protocol. These adjustments will however be apparent to a person skilled in the art, and are furthermore detailed in current PCR application manuals.

In the description and examples, reference is made to the following sequences:

10

SEQ ID No. 1: SalI fragment nucleotide sequence of vector pSF10.

SEQ ID No. 2: nucleotide sequence comprising the 5' region flanking the foreign DNA comprising the herbicide tolerance genes in EE-GM3.

SEQ ID No. 3: nucleotide sequence comprising the 3' region flanking the foreign DNA comprising the herbicide tolerance genes in EE-GM3.

15 SEQ ID No. 4: primer SOY028

SEQ ID No. 5: primer SOY029

SEQ ID No. 6: primer SMP187

SEQ ID No. 7: primer STV019

20 SEQ ID No. 8: nucleotide sequence of the amplicon

SEQ ID No. 9: primer 1 for amplification of control fragment (SOY01)

SEQ ID No. 10: primer 2 for amplification of control fragment (SOY02)

SEQ ID No. 11: nucleotide sequence of pB2/P35SAcK

SEQ ID No. 12: nucleotide sequence comprising the 5' region flanking the foreign DNA in EE-GM1

25 SEQ ID No. 13: nucleotide sequence comprising the 3' region flanking the foreign DNA in EE-GM1

SEQ ID No. 14: nucleotide sequence comprising the 5' region flanking the foreign DNA in EE-GM2

30 SEQ ID No. 15: nucleotide sequence comprising the 3' region flanking the foreign DNA in EE-GM2

SEQ ID No. 16: primer SOY06
 SEQ ID No. 17: primer SOY07
 SEQ ID No. 18: primer SOY09
 SEQ ID No. 19: primer SOY010
 5 SEQ ID No. 20: nucleotide sequence of a foreign DNA and plant flanking sequences in EE-GM3
 SEQ ID No. 21: primer SHA130
 SEQ ID No. 22: primer SHA178

Examples

10

1. Transformation of *Glycine max* with herbicide tolerance genes.

1.1. Description of the foreign DNA comprising the 2mEPSPS and HPPD-Pf-W336 chimeric genes

15

Plasmid pSF10 is a pUC19 derived cloning vector which contains a chimeric *2mepsp*s gene and a chimeric *hppd-Pf*-W336 gene located on a SalI fragment of about 7.3 kb. A full description of the DNA comprised between the two SalI restriction sites is given in Table 1 below. The nucleotide sequence is represented in SEQ ID No. 1.

20

Table 1. Nucleotide positions of the DNA comprised between the SalI restriction sites of pSF10 (SEQ ID No 1)

Nucleotide positions	Orientation	Description and references
188-479	complement	3'nos: sequence including the 3' untranslated region of the nopaline synthase gene from the T-DNA of pTiT37 of <i>Agrobacterium tumefaciens</i> (Depicker et al., 1982, <i>Journal of Molecular and Applied Genetics</i> , 1, 561-573)
480-1556	complement	hppdPf W336: the coding sequence of the 4-hydroxyphenylpyruvate dioxygenase of <i>Pseudomonas fluorescens</i> strain A32 modified by the replacement of the amino acid Glycine 336 with a Tryptophane, as described by Boudec et al. (2001) US Patent US6245968B1

Nucleotide positions	Orientation	Description and references
1557-1928	complement	TPotp Y: coding sequence of an optimized transit peptide derivative (position 55 changed into Tyrosine), containing sequence of the RuBisCO small subunit genes of <i>Zea mays</i> (corn) and <i>Helianthus annuus</i> (sunflower), as described by Lebrun et al. (1996) US5510471
1929-2069	complement	5'tev: sequence including the leader sequence of the tobacco etch virus as described by Carrington and Freed (1990) Journal of Virology, 64, 1590-1597
2070-3359	complement	Ph4a748 ABBC: sequence including the promoter region of the histone H4 gene of <i>Arabidopsis thaliana</i> , containing an internal duplication (Chabouté et al., 1987) Plant Molecular Biology, 8, 179-191.
3360-4374		Ph4a748: sequence including the promoter region of the histone H4 gene of <i>Arabidopsis thaliana</i> (Chabouté et al., 1987) Plant Molecular Biology, 8, 179-191.
4375-4855		intron1 h3At: first intron of gene II of the histone H3.III variant of <i>Arabidopsis thaliana</i> (Chaubet et al., 1992) Journal of Molecular Biology, 225, 569-574.
4856-5227		TPotp C: coding sequence of the optimized transit peptide, containing sequence of the RuBisCO small subunit genes of <i>Zea mays</i> (corn) and <i>Helianthus annuus</i> (sunflower), as described by Lebrun et al. (1996) US5510471
5228-6565		2mepsps: the coding sequence of the double-mutant 5-enol-pyruvylshikimate-3-phosphate synthase gene of <i>Zea mays</i> (corn) (Lebrun et al., 1997) WO9704103-A1
6566-7252		3'histonAt: sequence including the 3' untranslated region of the histone H4 gene of <i>Arabidopsis thaliana</i> (Chabouté et al., 1987) Plant Molecular Biology, 8, 179-191.

1.2. Event EE-GM3

The HPLC purified Sall-linearized pSF10 fragment of about 7.3 kb (containing the 2mEPSPS 5 glyphosate-tolerance gene and the HPPD inhibitor tolerance gene *HPPD-Pf-W336*) was used to obtain transformed soybean plants by means of direct gene transfer into cells of soybean type Jack (Nickell, C. D., G. R. Noel, D. J. Thomas, and R. Waller. Registration of 'Jack' soybean.

Crop Sci 1365, 30.1990), followed by regeneration of transformed plant cells into transgenic fertile soybean plants.

1.2.1 Identification of elite event EE-GM3

5

Elite event EE-GM3 was selected based on an extensive selection procedure based on good expression and stability of the herbicide tolerance genes, and its compatibility with optimal agronomic characteristics such as plant height, height to node, stand, vigor, seed yield, were evaluated. Soybean plants containing this event were selected from a wide range of different 10 transformation events obtained using the same chimeric genes. Parameters used in the selection of this event were: a) acceptable tolerance to isoxaflutole herbicide application in field trials, b) acceptable tolerance to glyphosate herbicide application in field trials, c) acceptable tolerance to combined application of isoxaflutole and glyphosate herbicides in field trials, d) an insertion of the herbicide tolerance transgenes at a single locus in the soybean plant genome, with absence of 15 vector backbone, e) overall agronomy similar to the parent plants used for transformation (maturity, lodging, disease susceptibility, etc.), and f) no significant yield drag caused by the insertion of the transforming DNA (as compared to an isogenic line without the event, such as the plant line used for transformation, grown under the same conditions).

20 At the T3 generation, a homozygous line of the soybean transformation event EE-GM3 was selected for seed production. Multi-location replicated agronomic field studies were conducted in the regions of adaptation of the parent variety, Jack. Field evaluations included herbicide tolerance and agronomic performance. The agronomic performance of plants containing EE-GM3 was found comparable to Jack (when no herbicides were applied).

25 The field evaluations also showed that plants carrying the EE-GM3 event have :

- similar plant morphology and seed characteristics compared to Jack,
- no change in response to soybean diseases compared to Jack, and
- no changes in seed germination or dormancy compared to Jack.

30 Seed (T1 or S1 generation) harvested from the initial transformant (T0) plant (the plant transformed with the construct so as to produce event EE-GM3) in the greenhouse were planted

in the field. Three blocks were planted and sprayed with 0, 2, or 4 kg/ha glyphosate. Seed was harvested from plants demonstrating the desired level of tolerance to the herbicide, glyphosate.

5 Seeds (T2 generation) harvested from self-pollinated T1 plants grown in the field were sown “plant to row”. Chi square analysis of segregation data for rows (fully or partially tolerant) and of individual plants within rows (tolerant or sensitive) demonstrates the expected Mendelian inheritance of a single insertion for EE-GM3.

10 Selection and seed increase continued until a line was determined to be homozygous for transformation event EE-GM3 and selected for core seed production in the fourth generation. Then, T5 generation seed served as a candidate for the development of different varieties. Plants in the sixth generation (T6 generation) were crossed with conventional soybean breeding lines in an introgression program designed to move the event into a broader base of commercial soybean germplasm. F1 hybrid plants (EE-GM3 lines x conventional lines) were grown to maturity and 15 the F2 seed was planted. Leaf samples of 901 F2 plants were analyzed by PCR primers designed to identify the zygosity of the EE-GM3 insert. The expected ratio of 1:2:1 for a single insertion segregation by the rules of Mendel was observed.

20 The selected event EE-GM3 was introduced in different commercial genetic backgrounds, and results of field trials on different locations were compared. Plants were challenged with glyphosate herbicide and/or isoxaflutole herbicide using different treatments. The plants exhibited good herbicide tolerance. Hundreds of different soybean cultivars containing event EE-GM3 were used in an inheritance study, and herbicides were applied. Selected lines from this trial were later increased in the field and also treated with herbicide. From that trial, 25 50 selected lines were increased, and these were also herbicide treated. The phytotoxicity scores for the latter lines sprayed with isoxaflutole and glyphosate showed some variability in response, but the range of responses among the lines reflected similar variability as was observed across 4 replications of the EE-GM3 event in the original Jack background, grown under the same treatment and environmental conditions. Hence, tolerance to the relevant herbicides across a 30 broad range of germplasm was observed for plants comprising EE-GM3.

Furthermore, plants containing the event EE-GM3 had normal leaf, flower and pod morphology, excellent fertility, and showed no disease or abnormal insect susceptibility in multiple genetic backgrounds. During introgression into multiple genetic backgrounds no aberrant problems or abnormalities were observed.

5

In one season, a 10 location study was designed to compare the agronomic performance of double herbicide tolerant soybean comprising transformation event EE-GM3 to the transformation parent variety, Jack and some non-transgenic soybean varieties. Using a randomized complete block design, EE-GM3 plants were grown in replicated plots with either 10 conventional weed control or with the intended herbicides, glyphosate and isoxaflutole. Plots with soybean plants containing transformation event EE-GM3 were sprayed with isoxaflutole herbicide at a target rate of 70 grams ai/Ha and with glyphosate herbicide at a target rate of 1060 grams ai/Ha. Herbicide application was made to these plants as a foliar spray at about the V4-V5 plant growth stage. Agronomic observations were made in the early, mid and late season. The 15 plant density (parameter; stand count) was higher for the Jack and the non-transgenic variety plots than in the event EE-GM3 plots by one standard deviation. The early stand count difference may have been the result of seed lot quality, as the EE-GM3 planting seed was produced in counter season nursery, while the seed of the non-transgenic varieties was produced in the contiguous US, normal production season. However, the number of days to achieve 50% 20 emergence and the plant vigor ratings were the same, indicating that the seed lots were comparable for these performance parameters. In the late season stand counts, Jack and the non-transgenic varieties remained different by one standard deviation from EE-GM3 plants. Plot yields of EE-GM3 event plants were also lower than those of Jack by one standard deviation, perhaps a result of the lower plant density of the EE-GM3 event plots. The yield of the non- 25 transgenic varieties was more than Jack as could be expected because of the advancement in yield potential found in more recent varieties.

In one trial, plant health ratings were made at three growth stages: V4-5, R1 and full maturity. The first evaluation was shortly after the intended herbicide application. At the time of the final 30 plant health evaluation, the EE-GM3-containing plants sprayed with both herbicides had the same score as the unsprayed Jack plants, or the unsprayed plants comprising EE-GM3. In

ratings by the agronomic staff, the herbicide-sprayed plants received a health rating of 3-4 (moderate injury) at the V4-5 and R1 plant growth stages. The unsprayed plants (untransformed Jack or soybean plants containing EE-GM3) were rated as 4.6-4.8 (rating of 5 indicates no injury). At the final plant health rating, all the plots received the same rating of 5 (no injury).

5

One trial season was one of exceptional rainfall and crop injury in the EE-GM3 plants following the intended herbicide was more obvious than observed in other seasons. The field evaluations also included monitoring of the fitness characters (reproduction, disease resistance, fecundity, seed dispersal, dormancy, persistence). For the reproductive characteristics; days to emergence, 10 days to 50% flowering and days to 90% pods maturing, the EE-GM3 and Jack plants were not different. No difference was noted in the reaction to natural infestations of plant diseases and insect pests. Although EE-GM3 produced less ultimate yield than Jack, no difference in fecundity (100 seed weight) was found. The assessment of seed dispersal parameters (pod shattering and plant lodging) found EE-GM3 and Jack to have the same pod shattering score, but 15 found EE-GM3 plants to be less prone to lodging. Evaluation of seed harvested from the 10 locations found no concerns raised by germination or dormancy testing.

In these trials during the season with exceptional rainfall, the final yield of EE-GM3 plants, regardless of the weed control treatment, was less than the yield of Jack by one standard 20 deviation (perhaps a result of the lower plant density of the EE-GM3 event plots). In the exceptionally wet season, crop injury (bleaching in 10-30% of the crop area) was reported for EE-GM3 plots up to six weeks following foliar application of the glyphosate and isoxaflutole herbicides. However, by maturity, "no injury" plant health ratings were assigned to all the plots. Replicated multi-location field trials with EE-GM3 introgressed in elite soybean cultivar 25 background, when compared to near-isogenic sister lines not containing the transgene, are expected to show no yield difference between plants containing event EE-GM3 and the near-isogenic lines (in the absence of herbicide treatment).

Further, in a replicated field trial significant crop tolerance (bleaching of less than 10 %) was 30 found in soybean plants comprising EE-GM3 when treated either pre- or post-emergence with IFT (70 gr ai/ha with 0.5 % NIS, Agridex), but also significant crop tolerance (bleaching of less

than 10 %) was found in soybean plants comprising EE-GM3 when treated with a post-emergence application of pyrasulfotole (35 gr ai/ha with 0.5 % NIS, Agridex), another HPPD inhibitor herbicide.

5 **1.2.2 Identification of the flanking regions and foreign DNA of elite event EE-GM3**

The sequence of the regions flanking the foreign DNA comprising the herbicide tolerance genes in the EE-GM3 elite event was determined to be as follows:

10 **1.2.2.1. Right (5') flanking region**

The fragment identified as comprising the 5' flanking region was sequenced and its nucleotide sequence is represented in SEQ ID No. 2. The sequence between nucleotide 1 and 1451 corresponds to plant DNA, while the sequence between nucleotide 1452 and 1843 corresponds to 15 foreign DNA.

1.2.2.2. Left (3') flanking region

The fragment identified as comprising the 3' flanking region was sequenced and its nucleotide sequence is represented in SEQ ID No. 3. The sequence between nucleotide 1 and 240 corresponds to foreign DNA, while the sequence between nucleotide 241 and 1408 corresponds to plant DNA.

1.2.2.3. Foreign DNA comprising the herbicide tolerance genes of EE-GM3

25 Using different molecular techniques, it has been determined that the foreign DNA of elite event EE-GM3 comprising the herbicide tolerance genes contains two partial 3' histonAt sequences in a head-to-head orientation, followed by 2 almost complete copies of the SalI fragment of pSF10 arranged in head-to-tail orientation (see Figure 1).

The foreign DNA comprising the herbicide tolerance genes of EE-GM3 thus contains in order the following sequences:

- from nucleotide 1 to nucleotide 199: the nucleotide sequence corresponding to complement of the nucleotide sequence of SEQ ID 1 from nt 6760 to nt 6958;
- 5 - from nucleotide 200 to nucleotide 624: the nucleotide sequence corresponding to the nucleotide sequence of SEQ ID 1 from nt 6874 to nt 7298;
- from nucleotide 625 to nucleotide 7909: the nucleotide sequence corresponding to the nucleotide sequence of SEQ ID 1 from nt 7 to nt 7291;
- 10 - from nucleotide 7910 to nucleotide 15163: the nucleotide sequence corresponding to the nucleotide sequence of SEQ ID 1 from nt 12 to nt 7265; and
- from nucleotide 15164 to nucleotide 15187: the nucleotide sequence corresponding to the nucleotide sequence of SEQ ID 3 from nt 217 to nt 240 (this sequence does not correspond to either pSF10 plasmid DNA or wt plant DNA and therefore is designated filler DNA).

This foreign DNA is preceded immediately upstream and contiguous with the foreign DNA by 15 the 5' flanking sequence of SEQ ID No 2 from nucleotide 1 to 1451 and is followed immediately downstream and contiguous with the foreign DNA by the 3' flanking sequence of SEQ ID No 3 from nucleotide 241 to nucleotide 1408.

Confirmed full DNA sequencing of the foreign DNA and flanking DNA sequences in EE-GM3 20 resulted in the sequence reported in SEQ ID No. 20. In this sequence, the inserted DNA is from nucleotide position 1452 to nucleotide position 16638, and the 2 almost complete copies from pSF10 arranged in head-to-tail orientation are from nucleotide position 2257 to nucleotide position 16601. The 5' flanking DNA sequence in SEQ ID No. 20 is the sequence from nucleotide position 1 to nucleotide position 1451 in SEQ ID No. 20, and the 3' flanking DNA 25 sequence in SEQ ID No. 20 is the sequence from nucleotide position 16639 to nucleotide position 17806 in SEQ ID No. 20.

1.3. Description of the foreign DNA comprising the phosphinothricinacetyltransferase chimeric genes

Plasmid pB2/P35SACK is a pUC19 derived cloning vector which contains a chimeric *pat* gene.
 5 A description of the vector is given in Table 2 below. The nucleotide sequence thereof is represented in SEQ ID No. 11.

Table 2. Nucleotide positions of constituents of pB2/P35SACK (SEQ ID No 11)

Nucleotide positions	Description and references
461-1003	35S promotor from Cauliflower Mosaic Virus
1004-1011	Synthetic polylinker derived sequences
1012-1563	Synthetic <i>pat</i> gene (amino acid sequence from <i>Streptomyces viridochromogenes</i>)
1564-1581	Synthetic polylinker derived sequences
1582-1784	35S terminator from Cauliflower Mosaic Virus

10 **1.4. Event EE-GM1**

1.4.1 Identification of EE-GM1

Herbicide-resistant soybean was developed by transformation of soybean with vector
 15 pB2/P35SACK using direct gene transfer.

Elite event EE-GM1 was selected based on an extensive selection procedure based on good expression and stability of the herbicide resistance gene and its compatibility with optimal agronomic characteristics.

20

1.4.2 Identification of the flanking regions and foreign DNA of elite event EE-GM1

1.4.2.1. Right (5') flanking region

The fragment identified as comprising the 5' flanking region was sequenced and its nucleotide sequence is represented in SEQ ID No. 12. The sequence between nucleotide 1 and 209 corresponds to plant DNA, while the sequence between nucleotide 210 and 720 corresponds to foreign DNA.

5

1.4.2.2. Left (3') flanking region

The fragment identified as comprising the 3' flanking region was sequenced and its nucleotide sequence is represented in SEQ ID No. 13. The sequence between nucleotide 1 and 568 corresponds to foreign DNA, while the sequence between nucleotide 569 and 1000 corresponds to plant DNA.

1.4.2.3. Foreign DNA comprising the herbicide tolerance genes of EE-GM1

15 Using different molecular techniques, it has been determined that the foreign DNA of elite event EE-GM1 comprising the herbicide tolerance gene comprises two copies of the chimeric pat gene in a direct repeat structure (see Figure 3).

20 The foreign DNA comprising the herbicide tolerance genes of EE-GM1 thus contains in order the following sequences:

- from nucleotide 1 to nucleotide 3122: the nucleotide sequence corresponding to the nucleotide sequence of SEQ ID 11 from nt 340 to nt 3461;
- from nucleotide 3123 to nucleotide 3458: the nucleotide sequence corresponding to the complement of the nucleotide sequence of SEQ ID 11 from nt 1 to nt 336;
- 25 - from nucleotide 3459 to nucleotide 4073: the nucleotide sequence corresponding to the complement of the nucleotide sequence of SEQ ID 11 from nt 3462 to nt 4076; and
- from nucleotide 4074 to nucleotide 6780: the nucleotide sequence corresponding to the nucleotide sequence of SEQ ID 11 from nt 337 to nt 3043; and
- 30 - from nucleotide 6781 to nucleotide 6790: the nucleotide sequence corresponding to the nucleotide sequence of SEQ ID 13 from nt 559 to nt 568 (this sequence does not correspond to either plasmid DNA or wt plant DNA and therefore is designated filler DNA).

This foreign DNA of EE-GM1 is preceded immediately upstream and contiguous with the foreign DNA at the 5' flanking sequence of SEQ ID No 12 from nucleotide 1 to 209 and is followed immediately downstream and contiguous with the foreign DNA at the 3' flanking sequence of SEQ ID No 13 from nucleotide 569 to nucleotide 1000.

1.5. Event EE-GM2

Herbicide-resistant soybean was developed by transformation of soybean with vector pB2/P35SACK using direct gene transfer.

Elite event EE-GM2 was selected based on an extensive selection procedure based on good expression and stability of the herbicide resistance gene and its compatibility with optimal agronomic characteristics.

15

1.5.1. Identification of the flanking regions and foreign DNA of elite event EE-GM2

1.5.1.1. Right (5') flanking region

20 The fragment identified as comprising the 5' flanking region was sequenced and its nucleotide sequence is represented in SEQ ID No. 14. The sequence between nucleotide 1 and 311 corresponds to plant DNA, while the sequence between nucleotide 312 and 810 corresponds to foreign DNA.

25 1.5.1.2. Left (3') flanking region

The fragment identified as comprising the 3' flanking region was sequenced and its nucleotide sequence is represented in SEQ ID No. 15. The sequence between nucleotide 1 and 507 corresponds to foreign DNA, while the sequence between nucleotide 569 and 1880 corresponds to plant DNA.

1.5.1.3. Foreign DNA comprising the herbicide tolerance genes of EE-GM2

Using different molecular techniques, it has been determined that the foreign DNA of elite event EE-GM2 comprising the herbicide tolerance gene comprises one copy of the chimeric pat gene
5 (see Figure 4).

The foreign DNA comprising the herbicide tolerance genes of EE-GM2 thus contains in order the following sequences:

- from nucleotide 1 to nucleotide 391: the nucleotide sequence corresponding to the
10 nucleotide sequence of SEQ ID 11 from nt 3458 to nt 3848; and
- from nucleotide 392 to nucleotide 3436: the nucleotide sequence corresponding to the nucleotide sequence of SEQ ID 11 from nt 413 to nt 3457.

This foreign DNA of EE-GM2 is preceded immediately upstream and contiguous with the
15 foreign DNA at the 5' flanking sequence of SEQ ID No 14 from nucleotide 1 to 311 and is followed immediately downstream and contiguous with the foreign DNA at the 3' flanking sequence of SEQ ID No 15 from nucleotide 508 to nucleotide 1880.

2. Development of Polymerase Chain Reaction Identification Protocols for EE-GM3.

20

2.1. Primers

Specific primers were developed which recognize sequences within the elite event.

25 A primer was developed which recognizes a sequence within the 3' flanking region of EE-GM3. A second primer was then selected within the sequence of the foreign DNA so that the primers span a sequence of about 263 nucleotides. The following primers were found to give particularly clear and reproducible results in a PCR reaction on EE-GM3 DNA:

30 SOY028: 5'-ATC.gCT.TTA.ACg.TCC.CTC.Ag -3 (SEQ ID No.: 4)
(target: insert DNA)

SOY029: 5'-CAA.ggC.CTC.gAg.ATT.ATC -3' (SEQ ID No.: 5)
 (target: plant DNA)

5 Primers targeting an endogenous sequence are preferably included in the PCR cocktail. These primers serve as an internal control in unknown samples and in the DNA positive control. A positive result with the endogenous primer-pair (presence of an PCR amplified fragment of 413 bp) demonstrates that there is ample DNA of adequate quality in the genomic DNA preparation for a PCR product to be generated. The endogenous primers were selected to recognize the
 10 endogenous actin soybean gene:

SOY01 5'-gTC.AgC.CAC.ACA.gTg.CCT.AT -3' (SEQ ID No.: 9)

SOY02 5'-gTT.ACC.gTA.CAg.gTC.TTT.CC -3' (SEQ ID No.: 10)

15

2.2. Amplified fragments

The expected amplified fragments in the PCR reaction are:

20 For primer pair SOY01-SOY02: 413bp (endogenous control)
 For primer pair SOY028-SOY029: 263bp (EE-GM3 elite event)

2.3. Template DNA

25 Template DNA was prepared from a leaf punch according to Edwards *et al.* (Nucleic Acid Research, 19, p1349, 1991). When using DNA prepared with other methods, a test run utilizing different amounts of template should be done. Usually 50 ng of genomic template DNA yields the best results.

30

2.4. Assigned positive and negative controls

To avoid false positives or negatives, it was determined that the following positive and negative controls should be included in a PCR run:

5

- Master Mix control (DNA negative control). This is a PCR in which no DNA is added to the reaction. When the expected result, no PCR products, is observed this indicates that the PCR cocktail was not contaminated with target DNA.

10

- A DNA positive control (genomic DNA sample known to contain the transgenic sequences). Successful amplification of this positive control demonstrates that the PCR was run under conditions which allow for the amplification of target sequences.

15

- A wild-type DNA control. This is a PCR in which the template DNA provided is genomic DNA prepared from a non-transgenic plant. When the expected result, no amplification of a transgene PCR product but amplification of the endogenous PCR product, is observed this indicates that there is no detectable transgene background amplification in a genomic DNA sample.

20

2.5. PCR conditions

25

Optimal results were obtained under the following conditions (In describing the various conditions for optimal results is meant to provide examples of such conditions. Clearly one skilled in the art could vary conditions, reagents and parameters such as using other Taq polymerases, and achieve desirable results):

- the PCR mix for 25 μ l reactions contains:

20 ng template DNA

30

2.5 μ l 10x Amplification Buffer (supplied by the manufacturer with the Taq polymerase)

0.5 μ l 10 mM dNTP's
0.4 μ l SOY01 (10pmoles/ μ l)
0.4 μ l SOY02 (10pmoles/ μ l)
0.7 μ l SOY028 (10pmoles/ μ l)
5 0.7 μ l SOY029 (10pmoles/ μ l)
0.1 μ l Taq DNA polymerase (5 units/ μ l)
water up to 25 μ l

- the thermocycling profile to be followed for optimal results is the following:

10 4 min. at 95°C

Followed by: 1 min. at 95°C
1 min. at 57°C
2 min. at 72°C
15 For 5 cycles

Followed by: 30 sec. at 92°C
30 sec. at 57°C
1 min. at 72°C
20 For 25 cycles

Followed by: 10 minutes at 72°C

2.6. Agarose gel analysis

25 To optimally visualize the results of the PCR it was determined that between 10 and 20 μ l of the PCR samples should be applied on a 1.5% agarose gel (Tris-borate buffer) with an appropriate molecular weight marker (e.g. 100bp ladder Pharmacia).

30

2.7. Validation of the results

It was determined that data from transgenic plant DNA samples within a single PCR run and a single PCR cocktail should not be acceptable unless 1) the DNA positive control shows the 5 expected PCR products (transgenic and endogenous fragments), 2) the DNA negative control is negative for PCR amplification (no fragments) and 3) the wild-type DNA control shows the expected result (endogenous fragment amplification).

When following the PCR Identification Protocol for EE-GM3 as described above, lanes showing 10 visible amounts of the transgenic and endogenous PCR products of the expected sizes, indicate that the corresponding plant from which the genomic template DNA was prepared, has inherited the EE-GM3 elite event. Lanes not showing visible amounts of either of the transgenic PCR products and showing visible amounts of the endogenous PCR product, indicate that the corresponding plant from which the genomic template DNA was prepared, does not comprise the 15 elite event. Lanes not showing visible amounts of the endogenous and transgenic PCR products, indicate that the quality and/or quantity of the genomic DNA didn't allow for a PCR product to be generated. These plants cannot be scored. The genomic DNA preparation should be repeated and a new PCR run, with the appropriate controls, has to be performed.

20 2.8. Use of discriminating PCR protocol to identify EE-GM3

Before attempting to screen unknowns, a test run, with all appropriate controls, is performed. The developed protocol might require optimization for components that may differ between labs (template DNA preparation, Taq DNA polymerase, quality of the primers, dNTP's, thermocycler, 25 etc.).

Amplification of the endogenous sequence plays a key role in the protocol. One has to attain PCR and thermocycling conditions that amplify equimolar quantities of both the endogenous and the transgenic sequence in a known transgenic genomic DNA template. Whenever the targeted 30 endogenous fragment is not amplified or whenever the targeted sequences are not amplified with

the same ethidium bromide staining intensities, as judged by agarose gel electrophoresis, optimization of the PCR conditions may be required.

Leaf material from a number of soybean plants, some of which comprising EE-GM3 were tested
5 according to the above-described protocol. Samples from elite event EE-GM3 and from soybean wild-type were taken as positive and negative controls, respectively.

Figure 2 illustrates the result obtained with the elite event PCR Identification Protocol for EE-GM3 on a number of soybean plant samples. The samples in lanes 2 and 3 were found to contain
10 elite event EE-GM3 as the 263 bp band is detected, while the samples in lanes 4 to 8 do not comprise EE-GM3. Lanes 6 and 7 comprise samples from other soybean transformation events obtained using the same herbicide tolerance chimeric genes; lane 8 contains DNA from wild type soybean plants and lane 9 represents the negative control (water) sample, lanes 1 and 10 represent the Molecular Weight Marker (100 bp ladder).

15

2.9. dPCR assay for EE-GM3 detection in bulked seed

A discriminating PCR (dPCR) assay is set up to detect low level presence of EE-GM3 in bulked seeds. A minimum level of 0.4% (w/w) of transgenic seeds in a bulk of non transgenic seeds was
20 successfully detected under repeatable conditions. Therefore the Limit of Detection is determined to be 0.4% (w/w).

The following primers are applied in this target PCR reaction:

25 Forward primer targeted to the T-DNA sequence:

SHA130 5' – CTA.TAT.TCT.ggT.TCC.AAT.TTA.TC -3' (SED ID No.12)

Reverse primer targeted to the 3' flanking sequence:

SMP178 5' – TgA.ggC.ACg.TAT.TgA.TgA.CC – 3' (SEQ ID No. 13)

The expected amplified fragment in the PCR reaction from these primers is 115 bp.

30

The target PCR reaction is performed on approximately 200ng of template DNA prepared from ground bulked seed according to a modified Gentra Puregene DNA purification extraction kit

(Qiagen). When using DNA prepared with other methods, a test run using samples with known relative levels of EE-GM3 should be performed.

A validated reference system PCR reaction, targeting an endogenous sequence, should ideally be performed in a separate PCR run to verify the suitability of the DNA sample for PCR analysis to 5 avoid false negative results.

For unknown test samples the PCR experiment should ideally include the appropriate positive and negative control samples, i.e.:

- Master Mix control (DNA negative control). This is a PCR in which no DNA is added to the reaction. When the expected result (no PCR product) is observed for both the target and the 10 reference system reaction this indicates that the PCR cocktail was not contaminated with target DNA.
- A DNA positive control (genomic DNA sample known to contain the transgenic sequences). Successful amplification of this positive control demonstrates that the PCR was run under conditions which allow for the amplification of target sequences.
- 15 - Also a wild-type DNA control can be added in this PCR. This is a PCR in which the template DNA provided is genomic DNA prepared from a non-transgenic plant. When the expected result, no amplification of a transgene PCR product but amplification of the endogenous PCR product, is observed this indicates that there is no detectable transgene background amplification in a genomic DNA sample.

20

Optimal results are obtained under the following conditions:

- the PCR mix for 25 μ l reactions contains:

25

200 ng template DNA
 5 μ l 5x Reaction Buffer
 0.25 μ l 20 mM dNTP's
 0.7 μ l SHA130 (10pmoles/l)
 0.4 μ l SMP178 (10pmoles/l)

30

0.1 μ l GO-Taq DNA polymerase (5 units/l)
 Add water up to 25 μ l

- the thermocycling profile to be followed for optimal results is the following:

4 min. at 95°C

5 Followed by: 1 min. at 95°C

1 min. at 57°C

2 min. at 72°C

For 5 cycles

10 Followed by: 30 sec. at 92°C

30 sec. at 57°C

1 min. at 72°C

For 30 cycles

15 Followed by: 10 minutes at 72°C

To optimally visualize the results of the PCR it was determined that 25µl of the PCR product should be applied on a 1.5% agarose gel (Tris-borate buffer) with an appropriate molecular weight marker (e.g. 50bp ladder).

20

When following the PCR method as described above, lanes showing visible amounts of the target and reference system PCR products of the expected sizes, indicate that the test sample from which the genomic template DNA was prepared, contained levels of EE-GM3 elite event above the detection limit of the target reaction

25 Lanes not showing visible amounts of the target PCR products but showing visible amounts of the reference system PCR product, indicate that the test sample from which the genomic template DNA was prepared, contained levels of EE-GM3 elite event below the detection limit of the target reaction

30 Lanes not showing visible amounts of the endogenous and transgenic PCR products, indicate that the quality and/or quantity of the genomic DNA didn't allow for a PCR product to be generated.

These plants cannot be scored. The genomic DNA preparation should be repeated and a new PCR run, with the appropriate controls, has to be performed.

5 **3. Use of a specific integration fragment as a probe for detection of material comprising EE-GM3.**

A specific integration fragment of EE-GM3 is obtained by PCR amplification using specific primers SOY028 (SEQ ID No. 4) and SOY029 (SEQ ID No. 5) yielding an amplicon with the 10 nucleotide sequence of SEQ ID No 8 or by chemical synthesis and is labeled. This integration fragment is used as a specific probe for the detection of EE-GM3 in biological samples. Nucleic acid is extracted from the samples according to standard procedures. This nucleic acid is then contacted with the specific probe under hybridization conditions which are optimized to allow formation of a hybrid. The formation of the hybrid is then detected to indicate the presence of 15 EE-GM3 nucleic acid in the sample. Optionally, the nucleic acid in the samples is amplified using the specific primers prior to contact with the specific probe. Alternatively, the nucleic acid is labeled prior to contact with the specific probe instead of the integration fragment. Optionally, the specific probe is attached to a solid carrier (such as, but not limited to a filter, strip or beads), prior to contact with the samples.

20

4. Polymerase Chain Reaction Identification Protocol for EE-GM1.

4.1. Primers

25 Specific primers were developed which recognize sequences within the elite event. More particularly, a primer was developed which recognizes a sequence within the 5' flanking region of EE-GM1. A second primer was then selected within the sequence of the foreign DNA so that the primers span a sequence of about 183 nucleotides. The following primers were found to give particularly clear and reproducible results in a PCR reaction on EE-GM1 DNA:

30

SOY06: 5'- ggC.gTT.CgT.AgT.gAC.TgA.gg -3' (SEQ ID No.: 16)

(target: plant DNA)

SOY07: 5'-gTT.TTA.CAA.CgT.CgT.gAC.Tgg-3' (SEQ ID No.: 17)

(target: insert DNA)

5

Primers targeting an endogenous sequence are preferably included in the PCR cocktail. These primers serve as an internal control in unknown samples and in the DNA positive control. A positive result with the endogenous primer-pair demonstrates that there is ample DNA of adequate quality in the genomic DNA preparation for a PCR product to be generated. The 10 endogenous primers were selected to recognize a housekeeping gene in *Glycine max*:

SOY01: 5'-gTC.AgC.CAC.ACA.gTg.CCT.AT-3' (SEQ ID No.: 9)

(located in *Glycine max* actin 1 gene (Accession J01298))

15

SOY02: 5'-gTT.ACC.gTA.CAg.gTC.TTT.CC-3' (SEQ ID No.: 10)

(located in *Glycine max* actin 1 gene (Accession J01298))

4.2. Amplified fragments

20

The expected amplified fragments in the PCR reaction are:

For primer pair SOY01-SOY02: 413bp (endogenous control)

For primer pair SOY06-SOY07: 183bp (EE-GM1 elite Event)

25

4.3. Template DNA

Template DNA was prepared from a leaf punch according to Edwards *et al.* (Nucleic Acid Research, 19, p1349, 1991). When using DNA prepared with other methods, a test run utilizing different amounts of template should be done. Usually 50 ng of genomic template DNA yields the best results.

4.4. Assigned positive and negative controls

To avoid false positives or negatives, it was determined that the following positive and negative
5 controls should be included in a PCR run:

- Master Mix control (DNA negative control). This is a PCR in which no DNA is added to the reaction. When the expected result, no PCR products, is observed this indicates that the PCR cocktail was not contaminated with target DNA.
10
- A DNA positive control (genomic DNA sample known to contain the transgenic sequences). Successful amplification of this positive control demonstrates that the PCR was run under conditions which allow for the amplification of target sequences.
- 15 - A wild-type DNA control. This is a PCR in which the template DNA provided is genomic DNA prepared from a non-transgenic plant. When the expected result, no amplification of a transgene PCR product but amplification of the endogenous PCR product, is observed this indicates that there is no detectable transgene background amplification in a genomic DNA sample.

20

4.5. PCR conditions

Optimal results were obtained under the following conditions:

25 - the PCR mix for 25µl reactions contains:

2.5 µl template DNA
2.5 µl 10x Amplification Buffer (supplied with Taq polymerase)
0.5 µl 10 mM dNTP's
30 0.5 µl SOY06 (10pmoles/µl)
0.5 µl SOY07 (10pmoles/µl)

0.25 µl SOY01 (10pmoles/µl)
0.25 µl SOY02 (10pmoles/µl)
0.1 µl Taq DNA polymerase (5 units/µl)
water up to 25 µl

5

- the thermocycling profile to be followed for optimal results is the following:

4 min. at 95°C

10

Followed by: 1 min. at 95°C
1 min. at 57°C
2 min. at 72°C
For 5 cycles

15

Followed by: 30 sec. at 92°C
30 sec. at 57°C
1 min. at 72°C
For 25 cycles

20

Followed by: 5 minutes at 72°C

4.6. Agarose gel analysis

To optimally visualize the results of the PCR it was determined that between 10 and 20µl of the
25 PCR samples should be applied on a 1.5% agarose gel (Tris-borate buffer) with an appropriate
molecular weight marker (e.g. 100bp ladder Pharmacia).

4.7. Validation of the results

30 It was determined that data from transgenic plant DNA samples within a single PCR run and a
single PCR cocktail should not be acceptable unless 1) the DNA positive control shows the

expected PCR products (transgenic and endogenous fragments), 2) the DNA negative control is negative for PCR amplification (no fragments) and 3) the wild-type DNA control shows the expected result (endogenous fragment amplification).

5 When following the PCR Identification Protocol for EE-GM1 as described above, lanes showing visible amounts of the transgenic and endogenous PCR products of the expected sizes, indicate that the corresponding plant from which the genomic template DNA was prepared, has inherited the EE-GM1 elite event. Lanes not showing visible amounts of either of the transgenic PCR products and showing visible amounts of the endogenous PCR product, indicate that the corresponding plant from which the genomic template DNA was prepared, does not comprise the elite event. Lanes not showing visible amounts of the endogenous and transgenic PCR products, indicate that the quality and/or quantity of the genomic DNA didn't allow for a PCR product to be generated. These plants cannot be scored. The genomic DNA preparation should be repeated and a new PCR run, with the appropriate controls, has to be performed.

10

15

4.8. Use of discriminating PCR protocol to identify EE-GM1

Before attempting to screen unknowns, a test run, with all appropriate controls, has to be performed. The developed protocol might require optimization for components that may differ 20 between labs (template DNA preparation, Taq DNA polymerase, quality of the primers, dNTP's, thermocycler, etc.).

Amplification of the endogenous sequence plays a key role in the protocol. One has to attain 25 PCR and thermocycling conditions that amplify equimolar quantities of both the endogenous and transgenic sequence in a known transgenic genomic DNA template. Whenever the targeted endogenous fragment is not amplified or whenever the targeted sequences are not amplified with the same ethidium bromide staining intensities, as judged by agarose gel electrophoresis, optimization of the PCR conditions may be required.

Glycine max leaf material from a number of plants, some of which comprising EE-GM1 were tested according to the above-described protocol. Samples from elite event EE-GM1 and from *Glycine max* wild-type were taken as positive and negative controls, respectively.

5 Figure 5 illustrates the result obtained with the elite event PCR Identification Protocol for EE-GM1 on a number of soybean plant samples (lanes 1 to 14). The samples in lane 1 were found to contain the elite event as the 185 bp band is detected, while the samples in lanes 2, 3 and 4 do not comprise EE-GM1. Lane 2 comprises another soybean elite event, lane 3 represents a non-transgenic *Glycine max* control; lane 4 represents the negative control (water) sample, and lane 5
10 represents the Molecular Weight Marker (100 bp).

5. Use of a specific integration fragment as a probe for detection of material comprising EE-GM1.

15 A specific integration fragment of EE-GM1 is obtained by PCR amplification using specific primers SOY06 (SEQ ID No. 16) and SOY07 (SEQ ID No. 17) or by chemical synthesis and is labeled. This integration fragment is used as a specific probe for the detection of EE-GM1 in biological samples. Nucleic acid is extracted from the samples according to standard procedures. This nucleic acid is then contacted with the specific probe under hybridization conditions which
20 are optimized to allow formation of a hybrid. The formation of the hybrid is then detected to indicate the presence of EE-GM1 nucleic acid in the sample. Optionally, the nucleic acid in the samples is amplified using the specific primers prior to contact with the specific probe. Alternatively, the nucleic acid is labeled prior to contact with the specific probe instead of the integration fragment. Optionally, the specific probe is attached to a solid carrier (such as, but not
25 limited to a filter, strip or beads), prior to contact with the samples.

6. Polymerase Chain Reaction Identification Protocol for EE-GM2.

6.1. Primers

5 Specific primers were developed which recognize sequences within the elite event. More particularly, a primer was developed which recognizes a sequence within the 3' flanking region of EE-GM2. A second primer was then selected within the sequence of the foreign DNA so that the primers span a sequence of about 150 nucleotides. The following primers were found to give particularly clear and reproducible results in a PCR reaction on EE-GM2 DNA:

10

SOY09: 5'- TgT.ggT.TAT.ggC.ggT.gCC.ATC -3' (SEQ ID No.: 18)
(target: plant DNA)

15

SOY010: 5'-TgC.TAC.Agg.CAT.CgT.ggT.gTC-3' (SEQ ID No.: 19)
(target: insert DNA)

Primers targeting an endogenous sequence are preferably included in the PCR cocktail. These primers serve as an internal control in unknown samples and in the DNA positive control. A positive result with the endogenous primer-pair demonstrates that there is ample DNA of 20 adequate quality in the genomic DNA preparation for a PCR product to be generated. The endogenous primers were selected to recognize a housekeeping gene in *Glycine max*:

25

SOY01: 5'-gTC.AgC.CAC.ACA.gTg.CCT.AT-3' (SEQ ID No.: 9)
(located in *Glycine max* actin 1 gene (Accession J01298))

30

SOY02: 5'-gTT.ACC.gTA.CAg.gTC.TTT.CC-3' (SEQ ID No.: 10)
(located in *Glycine max* actin 1 gene (Accession J01298))

6.2. Amplified fragments

The expected amplified fragments in the PCR reaction are:

5 For primer pair SOY01-SOY02: 413bp (endogenous control)
For primer pair SOY09-SOY010: 151bp (EE-GM2 elite Event)

6.3. Template DNA

10 Template DNA was prepared from a leaf punch according to Edwards *et al.* (Nucleic Acid Research, 19, p1349, 1991). When using DNA prepared with other methods, a test run utilizing different amounts of template should be done. Usually 50 ng of genomic template DNA yields the best results.

15 **6.4. Assigned positive and negative controls**

To avoid false positives or negatives, it was determined that the following positive and negative controls should be included in a PCR run:

20 - Master Mix control (DNA negative control). This is a PCR in which no DNA is added to the reaction. When the expected result, no PCR products, is observed this indicates that the PCR cocktail was not contaminated with target DNA.

25 - A DNA positive control (genomic DNA sample known to contain the transgenic sequences). Successful amplification of this positive control demonstrates that the PCR was run under conditions which allow for the amplification of target sequences.

30 - A wild-type DNA control. This is a PCR in which the template DNA provided is genomic DNA prepared from a non-transgenic plant. When the expected result, no amplification of a transgene PCR product but amplification of the endogenous PCR product, is observed this

indicates that there is no detectable transgene background amplification in a genomic DNA sample.

6.5. PCR conditions

5

Optimal results were obtained under the following conditions:

- the PCR mix for 25 μ l reactions contains:

10 2.5 μ l template DNA
 2.5 μ l 10x Amplification Buffer (supplied with Taq polymerase)
 0.5 μ l 10 mM dNTP's
 0.5 μ l SOY09 (10pmoles/ μ l)
 0.5 μ l SOY010 (10pmoles/ μ l)
15 0.25 μ l SOY01 (10pmoles/ μ l)
 0.25 μ l SOY02 (10pmoles/ μ l)
 0.1 μ l Taq DNA polymerase (5 units/ μ l)
 water up to 25 μ l

20 - the thermocycling profile to be followed for optimal results is the following:

4 min. at 95°C

25 Followed by: 1 min. at 95°C
 1 min. at 57°C
 2 min. at 72°C
 For 5 cycles

30 Followed by: 30 sec. at 92°C
 30 sec. at 57°C
 1 min. at 72°C
 For 25 cycles

Followed by: 5 minutes at 72°C

6.6. Agarose gel analysis

5

To optimally visualize the results of the PCR it was determined that between 10 and 20µl of the PCR samples should be applied on a 1.5% agarose gel (Tris-borate buffer) with an appropriate molecular weight marker (e.g. 100bp ladder Pharmacia).

10 6.7. Validation of the results

It was determined that data from transgenic plant DNA samples within a single PCR run and a single PCR cocktail should not be acceptable unless 1) the DNA positive control shows the expected PCR products (transgenic and endogenous fragments), 2) the DNA negative control is 15 negative for PCR amplification (no fragments) and 3) the wild-type DNA control shows the expected result (endogenous fragment amplification).

When following the PCR Identification Protocol for EE-GM2 as described above, lanes showing 20 visible amounts of the transgenic and endogenous PCR products of the expected sizes, indicate that the corresponding plant from which the genomic template DNA was prepared, has inherited the EE-GM2 elite event. Lanes not showing visible amounts of either of the transgenic PCR products and showing visible amounts of the endogenous PCR product, indicate that the corresponding plant from which the genomic template DNA was prepared, does not comprise the elite event. Lanes not showing visible amounts of the endogenous and transgenic PCR products, 25 indicate that the quality and/or quantity of the genomic DNA didn't allow for a PCR product to be generated. These plants cannot be scored. The genomic DNA preparation should be repeated and a new PCR run, with the appropriate controls, has to be performed.

6.8. Use of discriminating PCR protocol to identify EE-GM2

30

Before attempting to screen unknowns, a test run, with all appropriate controls, has to be performed. The developed protocol might require optimization for components that may differ between labs (template DNA preparation, Taq DNA polymerase, quality of the primers, dNTP's, thermocycler, etc.).

5

Amplification of the endogenous sequence plays a key role in the protocol. One has to attain PCR and thermocycling conditions that amplify equimolar quantities of both the endogenous and transgenic sequence in a known transgenic genomic DNA template. Whenever the targeted endogenous fragment is not amplified or whenever the targeted sequences are not amplified with 10 the same ethidium bromide staining intensities, as judged by agarose gel electrophoresis, optimization of the PCR conditions may be required.

15 *Glycine max* leaf material from a number of plants, some of which comprising EE-GM2 were tested according to the above-described protocol. Samples from elite event EE-GM2 and from *Glycine max* wild-type were taken as positive and negative controls, respectively.

20 Figure 6 illustrates the result obtained with the elite event PCR Identification Protocol for EE-GM2 on a number of soybean plant samples (lanes 1 to 14). The samples in lane 1 were found to contain the elite event as the 185 bp band is detected, while the samples in lanes 2, 3 and 4 do not comprise EE-GM2. Lane 2 comprises another soybean elite event, lane 3 represents a non-transgenic *Glycine max* control; lane 4 represents the negative control (water) sample, and lane 5 represents the Molecular Weight Marker (100 bp).

25 **7. Use of a specific integration fragment as a probe for detection of material comprising EE-GM2.**

30 A specific integration fragment of EE-GM2 is obtained by PCR amplification using specific primers SOY09 (SEQ ID No. 18) and SOY010 (SEQ ID No. 19) or by chemical synthesis and is labeled. This integration fragment is used as a specific probe for the detection of EE-GM2 in biological samples. Nucleic acid is extracted from the samples according to standard procedures.

This nucleic acid is then contacted with the specific probe under hybridization conditions which are optimized to allow formation of a hybrid. The formation of the hybrid is then detected to indicate the presence of EE-GM2 nucleic acid in the sample. Optionally, the nucleic acid in the samples is amplified using the specific primers prior to contact with the specific probe.

5 Alternatively, the nucleic acid is labeled prior to contact with the specific probe instead of the integration fragment. Optionally, the specific probe is attached to a solid carrier (such as, but not limited to a filter, strip or beads), prior to contact with the samples.

8. Generation of soybean plants comprising EE-GM3 and EE-GM1 or EE-GM3 and EE-GM2 and assessment of agronomic performance of such plants.

A soybean plant containing a combination of elite events EE-GM3 and EE-GM1 has been obtained by conventional crossing between a parent soybean plant comprising EE-GM3 and a parent soybean plant comprising EE-GM1. Progeny plants comprising both events are identified

15 using PCR Identification Protocols for EE-GM1 and EE-GM3 as described herein. Specifically, crosses were made with plants containing EE-GM3 and several EE-GM1 lines. Resulting F1 plants were grown and sprayed with glyphosate and glufosinate. F2 seed was harvested from F1 plants and planted (F2 plants were not sprayed). F2 single plants were pulled. F2:F3 plant rows were grown and sprayed with glyphosate and glufosinate. Rows homozygous for both EE-GM3

20 and EE-GM1 were identified and later harvested. Segregation data from this trial showed an expected Mendelian segregation of the events.

A soybean plant containing a combination of elite events EE-GM3 and EE-GM2 has been obtained by conventional crossing between a parent soybean plant comprising EE-GM3 and a parent soybean plant comprising EE-GM2. Progeny plants comprising both events are identified

25 using PCR Identification Protocols for EE-GM2 and EE-GM3 as described herein. Specifically, crosses were made with plants containing EE-GM3 and plants containing EE-GM2. The resulting F1 plants were crossed to 4 conventional lines. The F1s from these crosses were grown in the field and sprayed with glyphosate and glufosinate. F2 seed harvested from F1 plants

30 resistant to both herbicides was then planted. The F2 plants were sprayed with both glyphosate and glufosinate. Nine hundred plants tolerant to both herbicides were harvested and planted in a

field trial. Expected Mendelian segregation data for the events was obtained in this trial. Approximately 40 lines homozygous for tolerance to both herbicides were selected for agronomic uniformity for further studies. These lines had good tolerance to both herbicides with good agronomic characteristics.

5

Field trials with such soybean plants comprising the combined events in different types of commercial germplasm are being conducted at multiple locations and various agronomic parameters of the plants are being evaluated, including plant height, height to node, stand, vigor, seed yield, and glyphosate, isoxaflutole and glufosinate tolerance levels.

10

9. Introgression of EE-GM3 and EE-GM1 or EE-GM2 into preferred cultivars.

Elite event EE-GM3 and elite event EE-GM1 or EE-GM2 are introduced by repeated back-crossing into commercial soybean cultivars such as but not limited to Soybean Cultivar 7631014 (US2009252860); Soybean Cultivar 7431014 (US2009252859); Soybean Cultivar 7925084 (US2009252858); Soybean Cultivar 7311153 (US2009252857); Soybean Cultivar S070159 (US2009252856); Soybean Cultivar 7535357 (US2009246353); Soybean Cultivar S070160 (US2009246352); Soybean Cultivar 26074414 (US2009249508); Soybean Cultivar 7509171 (US2009249507); Soybean Cultivar S070158 (US2009246351); Soybean Cultivar 7511119 (US2009249506); Soybean Cultivar 7113111 (US2009238945); Soybean Cultivar S06-02RM018047 (US7592518); Soybean Cultivar 7013345 (US2009232957); Soybean Cultivar 7041461 (US2009235376); Soybean Cultivar 7549450 (US2009232956); Soybean Cultivar 7317090 (US2009232955); Soybean Cultivar 2N2V58015 (US2009226597); Soybean Cultivar 7243182 (US2009226596); Soybean Cultivar 7143182 (US2009226595); Soybean Cultivar 7043182 (US2009220673); Soybean Cultivar S070157 (US2009222950); Soybean Cultivar 306924721 (US2009220672); Soybean Cultivar 7614385 (US2009220671); Soybean Cultivar 7925118 (US2009214750); Soybean Cultivar 7821295 (US2009214749); Soybean Cultivar 7811336 (US2009214748); Soybean Cultivar S070150 (US2009214747); Soybean Cultivar 6214260 (US2009214746); Soybean Cultivar S070152 (US2009214745); Soybean Cultivar 7429331 (US2009214751); Soybean Cultivar 26034631 (US2009208634); Soybean Cultivar S07-03JR108674 (US7560621); Soybean Cultivar S07-03KL016279 (US7560620); Soybean

cultivar S06-CL959411 (US7554017); SOYBEAN CULTIVAR SG3870NRR (US2009158453); SOYBEAN CULTIVAR HFPR-G (CA2645702); Soybean cultivar S06-02JR423016 (US7521606); Soybean cultivar S06-01JR119814 (US7518039); Soybean cultivar S06-01JR119448 (US7518038); Soybean Cultivar 6540220 (US2009055960); Soybean Cultivar S060292 (US2009055959); Soybean Cultivar S050228 (US2009055958); Soybean cultivar S06-02JR423003 (US7491873); Soybean cultivar S06-02JR423005 (US7491872); Soybean cultivar S06-02JR409114 (US7485782); Soybean cultivar S06-SJ144056 (US7473823); Soybean cultivar (US7470835); Soybean cultivar 6910450 (US2008282369); SOYBEAN CULTIVAR 6223012 (US7446246); SOYBEAN CULTIVAR 6549250 (US7446245); Soybean Cultivar 17731225 (US2008271204); Soybean Cultivar 6928285 (US2008271203); Soybean Cultivar 6736054 (US2008271169); Soybean Cultivar S060299 (US2008271199); Soybean Cultivar S060294 (US2008271202); Soybean Cultivar 6943322 (US2008271201); Soybean cultivar 5343260 (US2008263719); Soybean cultivar 6439359 (US2008263704); Soybean cultivar 6238359 (US2008263703); Soybean cultivar 6547272 (US2008263702); Soybean cultivar 6929431 (US2008263701); Soybean cultivar 6703392 (US2008263700); Soybean cultivar 6044483 (US2008263699); Soybean cultivar S050224 (US2008263698); Soybean cultivar 6719022 (US2008263697); Soybean cultivar 5826056 (US2008263696); Soybean cultivar 6265047 (US2008263724); Soybean cultivar 6928331 (US2008263695); Soybean cultivar 6719331 (US2008263694); Soybean cultivar 6636454 (US2008263693); Soybean cultivar 6226454 (US2008263718); Soybean cultivar Q0073801 (US2008256657); SOYBEAN CULTIVAR 6326393 (US2008256652); SOYBEAN CULTIVAR 6408448 (US2008256651); Soybean cultivar 6449315 (US2008250524); Soybean cultivar S060296 (US2008250523); Soybean cultivar 6012078 (US2008250522); Soybean cultivar 6342078 (US2008250521); Soybean cultivar 6419156 (US2008250520); Soybean cultivar 5723264 (US2008250519); Soybean 25 cultivar S050225 (US2008250518); Soybean cultivar S060298 (US2008244783); Soybean cultivar 6935331 (US2008244782); Soybean cultivar 6819456 (US2008244787); Soybean cultivar S060297 (US2008244781); Soybean cultivar 6135319 (US2008244786); Soybean cultivar 6819331 (US2008244780); Soybean cultivar 6137445 (US2008244779); Soybean cultivar 6917445 (US2008244778); Soybean cultivar 6111333 (US2008244777); Soybean 30 Cultivar S050229 (US2008244776); Soybean Cultivar 6114011 (US2008244775); Soybean Cultivar 6900358 (US2008244784); Soybean Cultivar 6345184 (US2008244774); Soybean

Cultivar 6836085 (US2008244773); Soybean Cultivar 6635047 (US2008244772); Soybean Cultivar 6139105 (US2008244771); SOYBEAN CULTIVAR 6434385 (US2008244770); SOYBEAN CULTIVAR S060295 (US2008244769); Soybean Cultivar 6035184 (US2008244768); Soybean Cultivar S060293 (US2008209590); Soybean Cultivar 6733322 5 (US2008209594); SOYBEAN CULTIVAR 6421326 (US2008209593); Soybean Cultivar S060077 (US2008209589); SOYBEAN CULTIVAR 6600375 (US2008209592); Soybean cultivar S06-CL821457 (US7420104); Soybean cultivar S07-02KG294306 (US7414178); Soybean cultivar S06-BA046119 (US7414175); Soybean cultivar S07-02KG294307 (US7411114); Soybean Cultivar SG3865N (US2008189802); Soybean cultivar 6701475 10 (US7408097); Soybean Cultivar 1335025 (US2008178316); Soybean Cultivar 1686017 (US2008178315); Soybean Cultivar 2388028 (US2008178314); Soybean Cultivar 2387029 (US2008178313); Soybean cultivar S06-WW152330 (US7388129); Soybean cultivar 6424090 (US7385118); Soybean cultivar 6723322 (US7385115); Soybean cultivar SG4377NRR (US7385114); Soybean cultivar S06-02JR111334 (US7381864); Soybean cultivar 6141287 15 (US7378577); Soybean cultivar MT110501 (US7378576); Soybean cultivar (US7378575); Soybean cultivar S06-WW169267 (US7375261); Soybean cultivar 6223392 (US7371939); Soybean cultivar S06-CL968413 (US7371937); Soybean cultivar S06-CL951107 (US7368636); Soybean cultivar S06-MT9152077 (US7361810); Soybean Cultivar 4211676 (US2008092253); Soybean cultivar S06-M059029 (US7355101); Soybean Cultivar 6548193 (US7345228); 20 Soybean cultivar 6440261 (US7345227); Soybean cultivar S060291 (US7342151); Soybean cultivar S06-MT9206166 (US7339094); Soybean cultivar S06-WW013107 (US7339093); Soybean cultivar S06-M03256 (US7335820); Soybean cultivar 6134466 (US7332656); Soybean cultivar S06-01JR123373 (US7329800); Soybean cultivar S06-MT9211059 (US7326831); Soybean cultivar 26170838 (US2008016590); Soybean cultivar 306612412 (US2008016588); 25 Soybean cultivar 26660135 (US2008016587); Soybean cultivar 306734323 (US2008016586); Soybean cultivar S06-01JR122235 (US7317144); SOYBEAN CULTIVAR 5900450 (US7314986); Soybean cultivar S06-MT116260 (US7314984); Soybean cultivar S06-SJ143606 (US7312381); Soybean cultivar S06-98181-G01-35167 (US7309819); SOYBEAN CULTIVAR 26082635 (US7304219); Soybean cultivar BA922834 (US7304217); Soybean cultivar 30 01JR123480 (US7304216); Soybean cultivar M061422 (US7304215); Soybean cultivar 17082821 (US2007277262); Soybean cultivar 17621620 (US2007277261); Soybean cultivar

00977706 (US2007277260); Soybean cultivar S060182 (US2007277259); Soybean cultivar 26312034 (US7301078); Soybean cultivar 26143837 (US7301077); Soybean cultivar 435.TCS (US2007271626); Soybean cultivar 495.RC (US2007271625); Soybean cultivar 5306230 (US7297845); Soybean cultivar S06-WW167686 (US7291772); Soybean cultivar 6141145
5 (US2007245426); Soybean cultivar S050232 (US2007226829); Soybean cultivar 5333301 (US2007226828); SOYBEAN CULTIVAR S050215 (US2007226827); SOYBEAN CULTIVAR 3235020 (US2007226826); Soybean cultivar 5720482 (US2007226825); Soybean cultivar S050216 (US2007226824); Soybean Cultivar 5512112 (US2007226823); Soybean cultivar 3233021 (US2007226822); SOYBEAN CULTIVAR 1336024 (US2007226821);
10 Soybean cultivar 5348287 (US2007226820); Soybean cultivar 5204220 (US2007226819); Soybean cultivar 6188027 (US2007226818); Soybean cultivar 4183026 (US2007226817); Soybean cultivar S06-WW157958 (US7271325); Soybean cultivar 5733056 (US2007209091); Soybean cultivar 90501911 (US2007209090); Soybean cultivar S050221 (US2007204361); SOYBEAN CULTIVAR 5802205 (US2007204360); Soybean cultivar 1000642
15 (US2007204359); Soybean cultivar 5420128 (US2007204358); Soybean cultivar S050222 (US2007199094); Soybean cultivar S050217 (US2007199093); SOYBEAN CULTIVAR S050223 (US2007199092); Soybean cultivar S050218 (US2007199091); Soybean cultivar 5419227 (US2007199089); Soybean cultivar 5319227 (US2007199088); Soybean cultivar 5723045 (US2007199087); SOYBEAN CULTIVAR 5051007 (US2007199086); Soybean cultivar 5826175 (US2007192893); Soybean cultivar S050231 (US2007192892); SOYBEAN CULTIVAR 5826376 (US2007192891); SOYBEAN CULTIVAR 5628386 (US2007192890);
20 Soybean cultivar 5138236 (US2007186307); Soybean cultivar 5608398 (US2007186306); SOYBEAN CULTIVAR S050230 (US2007186305); SOYBEAN CULTIVAR 5624126 (US2007180561); SOYBEAN CULTIVAR 5019225 (US2007180560); SOYBEAN CULTIVAR
25 5549483 (US2007180559); SOYBEAN CULTIVAR 4189010 (US2007180551); SOYBEAN CULTIVAR 1486018 (US2007180550); SOYBEAN CULTIVAR S050235 (US2007180549); SOYBEAN CULTIVAR 5023230 (US2007180548); SOYBEAN CULTIVAR S050238 (US2007174930); SOYBEAN CULTIVAR 5830261 (US2007174928); SOYBEAN CULTIVAR S050226 (US7247772); SOYBEAN CULTIVAR 5806063 (US7247771); SOYBEAN
30 CULTIVAR S050233 (US7244881); SOYBEAN CULTIVAR 5726085 (US7241939); Soybean cultivar MT000792 (US7238867); Soybean cultivar 5521161 (US7235718); Soybean cultivar

WW109447 (US7235717); Soybean cultivar BA947474 (US7220898); Soybean cultivar 5939002 (US7217870); Soybean cultivar 5726175 (US7217869); Soybean cultivar 5432082 (US7217868); Soybean cultivar SG0850RR (US7211715); Soybean cultivar SG1750NRR (US7208658); Soybean cultivar MT017827 (US7208657); Soybean cultivar 4N2V74028 (US7205458); Soybean cultivar CL431203 (US7202400); Soybean cultivar 4N0S63222 (US7199288); Soybean cultivar 5520279 (US7196253); Soybean cultivar 5834401 (US7196252); Soybean cultivar 5621161 (US7196251); Soybean cultivar CL722114 (US7196250); Soybean cultivar 5741081 (US7193140); Soybean cultivar CL727422 (US7186895); Soybean cultivar 4N2V55022 (US7183468); Soybean cultivar 5083011 (US7173169); Soybean cultivar 5626085 (US7169976); SOYBEAN CULTIVAR S050051 (US7169974); SOYBEAN CULTIVAR 4506816 (US2006294626); Soybean cultivar WW152201 (US7132594); Soybean cultivar CL727636 (US7132593); Soybean cultivar M08851 (US7126047); Soybean cultivar 4324401 (US7105728); Soybean cultivar S050164 (US7105727); Soybean cultivar 4136015 (US2006195931); Soybean cultivar 3133014 (US2006195930); Soybean cultivar S040132 (US2006195929); Soybean Cultivar 4328386 (US2006195928); Soybean cultivar 1339013 (US2006195927); SOYBEAN CULTIVAR 4423183 (US2006195925); Soybean cultivar S040131 (US2006195924); Soybean cultivar 4929388 (US2006195923); Soybean cultivar 4817034 (US2006195922); Soybean cultivar 4916816 (US7098385); Soybean cultivar 4713487 (US2006191032); Soybean cultivar 4348019 (US2006191031); Soybean cultivar S040122 (US2006191030); Soybean cultivar S040133 (US2006185031); Soybean cultivar CL821418 (US7091404); SOYBEAN CULTIVAR 4441080 (US7091403); Soybean cultivar 4805442 (US2006179509); Soybean cultivar 4921237 (US2006179508); Soybean cultivar 4417380 (US2006174369); Soybean cultivar 4405070 (US2006174368); Soybean cultivar 4417779 (US7084328); Soybean cultivar S040125 (US2006168678); Soybean cultivar 4909380 (US7081572); Soybean cultivar S050162 (US7081571); Soybean cultivar 6084016 (US7081570); Soybean cultivar S050163 (US7078600); Soybean cultivar S040135 (US7078598); Soybean cultivar S040117 (US7078597); Soybean cultivar M03393 (US7071391); Soybean cultivar 4145306 (US7064253); Soybean cultivar 900213 (US2006117405); Soybean cultivar 1000126 (US2006117404); Soybean cultivar 901023 (US2006117403); Soybean cultivar S040130 (US7053280); Soybean cultivar 4706198 (US7053279); Soybean cultivar S040118

(US7053278); Soybean cultivar S040119 (US7053277); Soybean cultivar S040123 (US7053276); Soybean cultivar 4442112 (US7049497); SOYBEAN CULTIVAR 917013 (US7045689); Soybean cultivar S040124 (US7045691); Soybean cultivar 4238491 (US7045690); Soybean cultivar S010136 (US7041882); Soybean cultivar 900613 (US7030297);
5 Soybean cultivar 4337175 (US7030301); Soybean cultivar S040121 (US7030300); Soybean cultivar 4216033 (US7030299); Soybean cultivar S040128 (US7022901); Soybean cultivar S040120 (US7022900); Soybean cultivar S040127 (US7019199); Soybean cultivar S040134 (US7015378); Soybean cultivar S040129 (US7015377); Soybean cultivar 4513420 (US7005564); Soybean cultivar 943013 (US2006031958); Soybean cultivar S030136
10 (US2006021081); Soybean cultivar 927013 (US2006021080); Soybean cultivar 1000109 (US2006015962); Soybean cultivar 90046112 (US2006010530); Soybean cultivar 90897327 (US2006010529); Soybean cultivar 90362421 (US2006010528); Soybean cultivar 03022253 (US2006010527); Soybean cultivar 02022433 (US2006010526); Soybean cultivar 02022323 (US2006010525); Soybean cultivar 02912951 (US2006010524); Soybean cultivar 0102115
15 (US2006010523); Soybean cultivar 915034 (US2006010522); Soybean cultivar 0509255 (US2006010521); Soybean cultivar 4803070 (US6982368); Soybean cultivar 4704310 (US6979762); Soybean cultivar SJ919784 (US2005268362); Soybean cultivar CL615261 (US2005268361); Novel soybean (US2004199964); Soybean cultivar 0509214 (US2005210542); Soybean cultivar 70826751 (US2005193442); Soybean cultivar 0509243
20 (US2005193441); Soybean cultivar 0509246 (US2005193440); Soybean cultivar 0509253 (US2005193439); Soybean cultivar 0509247 (US2005193438); Soybean cultivar 0509252 (US2005193437); Soybean cultivar 0509241 (US2005193436); Soybean cultivar 0509249 (US6884927); Soybean cultivar 0509244 (US2005183158); Soybean cultivar 0509240 (US2005183157); Soybean cultivar 0509239 (US2005183156); Soybean cultivar 0509254
25 (US2005183155); Soybean cultivar 0509245 (US2005183154); Soybean cultivar 0509251 (US2005183153); Soybean cultivar 4283008 (US6888050); Soybean cultivar 2386009 (US2005183152); Soybean cultivar 3282002 (US6870080); Soybean cultivar 0509248 (US2005183151); Soybean cultivar 5091007 (US6906249()); Soybean cultivar 0509236 (US2005166281); Soybean cultivar 0509235 (US2005166280); Soybean cultivar 0509237
30 (US2005166279); Soybean cultivar SG5322NRR (US2005164390); Soybean cultivar SG5030NRR (US2005166278); Soybean cultivar SG4911NRR (US2005166277); Soybean

cultivar S030153 (US2005160504); Soybean cultivar S030158 (US2005144680); SOYBEAN CULTIVAR S030160 (US2005144679); Soybean cultivar S030161 (US2005144678); Soybean cultivar S030157 (US2005144677); Soybean cultivar S030155 (US2005144676); Soybean cultivar S030156 (US2005144675); SOYBEAN CULTIVAR S030159 (US2005144674);
5 Soybean cultivar S030154 (US6900376); Soybean cultivar S020030 (US2005114929); Soybean cultivar S030010 (US2005114928); Soybean cultivar SG1431RR (US2005097629); SOYBEAN CULTIVAR SG1330NRR (US2005097642); Soybean cultivar S030150 (US2005071900); SOYBEAN CULTIVAR S022209 (US2005050601); Soybean cultivar S022217 (US2005050600); Soybean cultivar S022219 (US2005050599); Soybean cultivar S030151
10 (US2005050598); Soybean cultivar 0491735 (US2005022272); Soybean cultivar SO22218 (US2005022271); Soybean cultivar 6190006 (US2004268447); Soybean cultivar SG1120RR (US2004250316); Soybean cultivar 0487681 (US2004237153); Soybean cultivar 0491717 (US2004237152); Soybean cultivar SO22220 (US2004237151); Soybean cultivar 0491715 (US2004237150); Soybean cultivar 0491712 (US2004237149); Soybean cultivar 0491718
15 (US2004237148); Soybean cultivar 99271316 (US2004221344); Soybean cultivar SO22212 (US2004221343); Soybean cultivar 0491737 (US2004221342); Soybean cultivar SO22211 (US2004221341); Soybean cultivar SO22210 (US2004221340); Soybean cultivar SO22213 (US2004221339); Soybean cultivar 0491725 (US2004221346); Soybean cultivar 03129016 (US2004221329); Soybean cultivar SO22208 (US2004221328); Soybean cultivar SO22207
20 (US2004221345); Soybean cultivar 02932 (US2004210968); Soybean cultivar 94137321 (US2004205862); Soybean cultivar 94106224 (US2004205861); Soybean cultivar 94143901 (US2004205859); SOYBEAN CULTIVAR 0487685 (US2004205858); SOYBEAN CULTIVAR 92440927 (US2004205857); Soybean cultivar 0487686 (US2004205856); Soybean cultivar SO22215 (US2004205855); Soybean cultivar SO22214 (US2004205854); SOYBEAN
25 CULTIVAR 0491726 (US2004205849); SOYBEAN CULTIVAR 92478609 (US2004205853); Soybean cultivar 922013 (US6781040); SOYBEAN CULTIVAR 0491727 (US2004205852); SOYBEAN CULTIVAR 0491728 (US2004205851); Soybean cultivar 1465003 (US2004098766); Soybean cultivar 3186004 (US2004019936); Soybean cultivar 7085005 (US2004205850); Soybean cultivar SO22204 (US2004199958); Soybean cultivar SO22206
30 (US2004199957); Soybean cultivar 0491731 (US2004199956); Soybean cultivar 0491733 (US2004199955); Soybean cultivar 0491738 (US2004199954); Soybean cultivar 0491732

(US2004199953); Soybean cultivar 0491729 (US2004199952); Soybean cultivar SO20011 (US2004199951); Soybean cultivar 0491739 (US2004199950); Soybean cultivar 0491730 (US2004199949); Soybean cultivar 13873 (US2004199948); Soybean cultivar 954011 (US2004181822); Soybean cultivar 010022 (US2004181831); Soybean cultivar 4181001
5 (US2003229926); Soybean cultivar 0491721 (US2004168228); Soybean cultivar 0491723 (US6911581 ()); Soybean cultivar 0491716 (US2004168226); Soybean cultivar 0491713 (US2004168225); Soybean cultivar 0491711 (US2004168224); Soybean cultivar 0491722 (US2004168223); Soybean cultivar 0491724 (US2004168222); Soybean cultivar 0491720 (US2004168221); Soybean cultivar 0487682 (US2004168220); Soybean cultivar 0491714
10 (US2004168219); Soybean cultivar 0491719 (US2004168218); Soybean cultivar DP 5634 RR (US2003177540); Soybean Cultivar SS6-D7 (US2004098765); Soybean cultivar 926877 (US2004064859); Soybean cultivar SE73753 (US2004055059); Soybean cultivar SN83594 (US2004055058); Soybean cultivar SE71112 (US2004055056); Soybean cultivar SE73090 (US2004055054); Soybean cultivar SN79526 (US2004055053); Soybean cultivar SW90702
15 (US2004055052); Soybean cultivar SN79525 (US2004055051); Soybean cultivar SE90345 (US2004055050); Soybean cultivar 0149928 (US2004055049); Soybean cultivar SN83780 (US2004055048); Soybean cultivar 0053840 (US2004055047); Soybean cultivar 924001 (US2004055046); Soybean cultivar 0004747 (US2004055057); Soybean cultivar 0037357 (US2004055045); Soybean cultivar SN83366 (US2004055044); Soybean cultivar SN76208
20 (US2004055043); Soybean cultivar 0037370 (US2004055042); Soybean cultivar SX95512 (US2004049821); Soybean cultivar 0096008 (US2004049820); Soybean cultivar SN83544 (US2004049819); Soybean cultivar 0088401 (US2004049818); Soybean cultivar SN64195 (US2004049817); Soybean cultivar 0034754 (US2004049816); Soybean cultivar SN71173 (US2004049815); Soybean cultivar SN83211 (US2004049814); Soybean cultivar 92422749
25 (US2004045058); Soybean cultivar 0120311 (US2004045057); Soybean cultivar S010344 (US2004003438); Soybean cultivar 70876922 (US2004003437); Soybean cultivar 924496 (US2004003436); Soybean cultivar 19705120 (US2003237116); Soybean cultivar 19704220 (US2003235914); Soybean Cultivar 19704280 (US2003237115); Soybean cultivar 19704210 (US2003237114); Soybean cultivar S37-N4 (US2003237113); Soybean cultivar 19602310
30 (US2003233685); Soybean cultivar 19704120 (US2003233684); Soybean cultivar 19704230 (US2003233683); Soybean cultivar 1000126 (US2003233682); Soybean cultivar 93831526

(US2003221226); Soybean cultivar 0322581 (US2003221225); Soybean cultivar 0332149 (US2003213028); Soybean cultivar 0332144 (US2003213027); Soybean cultivar 924788 (US2003213026); Soybean cultivar 924861 (US2003213025); Soybean cultivar 928070 (US2003213024); Soybean cultivar S010354 (US2003213023); Soybean cultivar S010360 5 (US2003213022); Soybean cultivar S010361 (US2003213021); Soybean cultivar S010363 (US2003213020); Soybean cultivar S010364 (US2003213019); Soybean cultivar 0332148 (US2003208805); Soybean cultivar 0332147 (US2003208804); Soybean cultivar 0332146 (US2003208803); Soybean cultivar 0332135 (US2003208802); Soybean cultivar 1000144 (US2003208801); Soybean cultivar 0332143 (US2003208800); Soybean cultivar 0332145 10 (US2003208799); Soybean cultivar S010345 (US2003204884); Soybean cultivar 0332131 (US2003204883); Soybean cultivar 0332130 (US2003204882); Soybean cultivar 0332129 (US2003204881); Soybean cultivar 0332122 (US2003204880); Soybean cultivar S010350 15 (US2003204879); Soybean cultivar S010355 (US2003204878); Soybean cultivar 031766 (US2003204877); Soybean cultivar S010353 (US2003204876); Soybean cultivar 0322580 (US2003200579); Soybean cultivar 0322579 (US2003200578); Soybean cultivar S010347 20 (US2003200577); Soybean cultivar S010349 (US2003200576); Soybean cultivar 0332141 (US2003200575); Soybean cultivar 0332142 (US2003200574); Soybean Cultivar 0332133 (US2003200573); Soybean cultivar 0332134 (US2003200572); Soybean cultivar 0332139 (US2003200571); Soybean cultivar 0332137 (US2003200570); Soybean variety XB33U08 25 (US7598435); Soybean variety XB27D08 (US7592519); Soybean variety XB41M08 (US7589261); Soybean variety XB05J08 (US7589260); Soybean variety XB33T08 (US7589259); Soybean variety XB30Y08 (US7586025); Soybean variety XB40U08 (US7582813); Soybean variety XB29M08 (US7582811); SOYBEAN VARIETY 93Y10 (US2009144843); SOYBEAN VARIETY D4325666 (US2009055957); SOYBEAN VARIETY 20 D4125897 (US2009055956); SOYBEAN VARIETY D4698573 (US2009055955); SOYBEAN VARIETY D4356652 (US2009019592); SOYBEAN VARIETY D4456885 (US2009019591); SOYBEAN VARIETY D4698013 (US2009019590); SOYBEAN VARIETY D4637114 25 (US2009019589); SOYBEAN VARIETY D4102367 (US2009019595); SOYBEAN VARIETY D4266582 (US2009019594); SOYBEAN VARIETY D4422801 (US2009019593); SOYBEAN VARIETY D4520980 (US2009019588); SOYBEAN VARIETY D4521369 (US2009019587); SOYBEAN VARIETY D4223057 (US2009019586); SOYBEAN VARIETY D4682156 30

(US2009019585); SOYBEAN VARIETY D4233569 (US2009019584); SOYBEAN VARIETY D4925614 (US2009019583); SOYBEAN VARIETY D4203144 (US2009019604); SOYBEAN VARIETY D4102536 (US2009019582); SOYBEAN VARIETY D4865324 (US2009019581); SOYBEAN VARIETY D4825495 (US2009019580); SOYBEAN VARIETY D4659251
5 (US2009019579); SOYBEAN VARIETY D4258962 (US2009019578); SOYBEAN VARIETY D4253969 (US2009019577); SOYBEAN VARIETY D4696658 (US2009019603); SOYBEAN VARIETY D4256925 (US2009019576); SOYBEAN VARIETY D4253681 (US2009019575); SOYBEAN VARIETY D4789254 (US2009019574); SOYBEAN VARIETY D4713125 (US2009019573); SOYBEAN VARIETY D4526223 (US2009019572); SOYBEAN VARIETY
10 D4556201 (US2009019571); SOYBEAN VARIETY D4012368 (US2009019570); SOYBEAN VARIETY D4452019 (US2009019569); SOYBEAN VARIETY D4201483 (US2009019568); SOYBEAN VARIETY D4463892 (US2009019567); SOYBEAN VARIETY D4159630 (US2009019566); SOYBEAN VARIETY D4470236 (US2009019565); SOYBEAN VARIETY D4063284 (US2009019564); SOYBEAN VARIETY D4021792 (US2009013429); SOYBEAN
15 VARIETY D4902530 (US2009013428); SOYBEAN VARIETY D4367012 (US2009013427); SOYBEAN VARIETY D4923560 (US2009013426); SOYBEAN VARIETY D4253854 (US2009013425); SOYBEAN VARIETY D4210110 (US2009007290); SOYBEAN VARIETY D4523081 (US2009007289); SOYBEAN VARIETY D4328762 (US2009007288); SOYBEAN VARIETY D4483789 (US2009007287); SOYBEAN VARIETY D4311702 (US2009007286);
20 SOYBEAN VARIETY D4127789 (US2008313765); SOYBEAN VARIETY D4361423 (US2008313764); SOYBEAN VARIETY D4208814 (US2008313763); SOYBEAN VARIETY D4201139 (US2008313762); SOYBEAN VARIETY D4120384 (US2008313761); SOYBEAN VARIETY D4572906 (US2008313760); SOYBEAN VARIETY D4301279 (US2008313759); SOYBEAN VARIETY D4422957 (US2008313758); SOYBEAN VARIETY D4256958
25 (US2008313757); SOYBEAN VARIETY 4074328 (US2008282366); SOYBEAN VARIETY XB47Q06 (US2008244767); SOYBEAN VARIETY XB26R06 (US2008244766); SOYBEAN VARIETY 4991629 (US2008216190); SOYBEAN VARIETY 4158090 (US2008216189); Soybean Variety XB40K07 (US2008209582); SOYBEAN VARIETY D0069201 (US2008178345); SOYBEAN VARIETY D0064801 (US2008178320); SOYBEAN VARIETY
30 D0063801 (US2008178344); SOYBEAN VARIETY D0061501 (US2008178343); SOYBEAN VARIETY 4938051 (US2008178319); SOYBEAN VARIETY 4880500 (US2008178318);

SOYBEAN VARIETY 4835953 (US2008178317); SOYBEAN VARIETY 4684181 (US2008178342); SOYBEAN VARIETY 4427363 (US2008178340); SOYBEAN VARIETY 4676311 (US2008178339); SOYBEAN VARIETY 4953710 (US2008178337); SOYBEAN VARIETY 4857548 (US2008178336); SOYBEAN VARIETY 4551757 (US2008178335);
5 SOYBEAN VARIETY 4027271 (US2008178334); SOYBEAN VARIETY 4274171 (US2008178333); SOYBEAN VARIETY 0341931 (US2008178332); SOYBEAN VARIETY 4282159 (US2008178331); SOYBEAN VARIETY 4852004 (US2008178330); SOYBEAN VARIETY 4688589 (US2008178329); SOYBEAN VARIETY 4614131 (US2008178327);
10 SOYBEAN VARIETY 4201823 (US2008178326); SOYBEAN VARIETY 92M22 (US2008178350); SOYBEAN VARIETY 4174206 (US2008178322); SOYBEAN VARIETY 4305498 (US2008178321); SOYBEAN VARIETY 4423586 (US2008172761); SOYBEAN VARIETY 4568207 (US2008172756); SOYBEAN VARIETY 4840308 (US2008172755);
15 SOYBEAN VARIETY 4256323 (US2008172754); SOYBEAN VARIETY 4789516 (US7399907); SOYBEAN VARIETY 90Y40 (US2008168581); SOYBEAN VARIETY 4959932 (US7396983); SOYBEAN VARIETY 4062885 (US7394000); Soybean variety 4858197 (US7390940); Soybean variety 4092390 (US7390939); Soybean variety 4735486 (US7390938); Soybean variety 4219527 (US7388132); Soybean variety 4599695 (US7388131);
20 Soybean variety 4554257 (US7388130); Soybean variety 4896902 (US7385113); Soybean variety 4367308 (US7385112); Soybean variety 4589609 (US7385111); Soybean variety 4640250 (US7385110); Soybean variety 4540394 (US7385109); Soybean variety 4297661 (US7385108); Soybean variety 4958786 (US7381866); Soybean variety 4440685 (US7375262);
25 Soybean variety 4008211 (US7371938); Soybean variety 4778469 (US7368637); Soybean variety 4766295 (US7355103); Soybean variety 4436909 (US7355102); Soybean variety 4812469 (US7351886); Soybean variety 4761767 (US7351885); Soybean variety 4142393 (US7329801); Soybean variety 4502135 (US7326832); Soybean variety 4353363 (US7321082);
30 Soybean variety 91B42 (US7317143); SOYBEAN VARIETY 0330739 (US2007271622); Soybean variety 0384279 (US7294768); SOYBEAN VARIETY 4175567 (US2007256187); SOYBEAN VARIETY 4336643 (US2007256186); SOYBEAN VARIETY 4671685 (US2007256185); SOYBEAN VARIETY 4309194 (US2007256190); SOYBEAN VARIETY 0330738 (US2007256184); SOYBEAN VARIETY 0045477 (US2007256183); SOYBEAN VARIETY 0437973 (US2007256182); SOYBEAN VARIETY 0457028 (US2007256181);

SOYBEAN VARIETY 0367478 (US2007256180); SOYBEAN VARIETY 0358232 (US2007256179); SOYBEAN VARIETY 0417158 (US2007256178); SOYBEAN VARIETY 4559809 (US2007256177); SOYBEAN VARIETY 0196172 (US2007256176); SOYBEAN VARIETY 4785923 (US2007256175); SOYBEAN VARIETY 4587513 (US2007256174);
5 SOYBEAN VARIETY 0409670 (US2007256173); SOYBEAN VARIETY 4010165 (US2007256172); SOYBEAN VARIETY 0421133 (US2007256171); SOYBEAN VARIETY 0240187 (US2007256170); SOYBEAN VARIETY 0387907 (US2007256169); SOYBEAN VARIETY 0232405 (US2007256168); SOYBEAN VARIETY 0146529 (US2007256167); SOYBEAN VARIETY 4788561 (US2007256166); SOYBEAN VARIETY 457114
10 (US2007256165); SOYBEAN VARIETY 0149217 (US2007256164); SOYBEAN VARIETY 4247825 (US2007254366); SOYBEAN VARIETY 0212938 (US2007256163); SOYBEAN VARIETY 0146565 (US2007256162); SOYBEAN VARIETY 4647672 (US2007256161); SOYBEAN VARIETY 0215818 (US2007256160); SOYBEAN VARIETY 0384531 (US2007256159); SOYBEAN VARIETY 4878185 (US2007254365); SOYBEAN VARIETY 15 4498438 (US2007256158); SOYBEAN VARIETY 0436052 (US2007256157); SOYBEAN VARIETY 4782157 (US2007256156); SOYBEAN VARIETY 0385457 (US2007256155); SOYBEAN VARIETY 0385240 (US2007256154); SOYBEAN VARIETY 4735316 (US2007256153); SOYBEAN VARIETY 0277524 (US2007256152); SOYBEAN VARIETY 0276951 (US2007256151); Soybean Variety XB37L07 (US2007245429); Soybean Variety
20 XB35X07 (US2007226837); Soybean Variety XB35S07 (US2007226836); Soybean Variety XB35F07 (US2007226835); Soybean Variety XB34R07 (US2007226834); Soybean Variety XB34L07 (US2007226833); Soybean Variety XB34D07 (US2007226832); Soybean Variety XB33G07 (US2007226831); Soybean Variety 98Y11 (US2007169220); Soybean variety 0137335 (US7241941); Soybean Variety XB15E07 (US2007150980); Soybean Variety 92M52
25 (US2007150979); Soybean Variety XB47R07 (US2007136888); Soybean Variety XB46V07 (US2007136887); Soybean Variety XB57E07 (US2007136886); Soybean Variety XB54X07 (US2007136885); Soybean Variety XB54V07 (US2007136884); Soybean Variety XB52Q07 (US2007136883); Soybean Variety XB37M07 (US2007136882); Soybean Variety XB37J07 (US2007136881); Soybean Variety XB34Q07 (US2007136880); Soybean Variety XB32S07
30 (US2007136879); Soybean Variety XB32J07 (US2007136878); Soybean Variety XB31R07 (US2007136877); Soybean Variety XB31J07 (US2007136876); Soybean Variety XB29K07

(US2007136875); Soybean Variety XB31H07 (US2007136874); Soybean Variety XB30G07 (US2007136873); Soybean Variety XB30E07 (US2007136872); Soybean Variety XB25E07 (US2007136871); Soybean Variety XB26X07 (US2007136870); Soybean Variety XB23L07 (US2007136869); Soybean Variety XB19Z07 (US2007136868); Soybean Variety XB19E07 5 (US2007136867); Soybean Variety XB18M07 (US2007136866); Soybean Variety XB18K07 (US2007136865); Soybean Variety XB18J07 (US2007136864); Soybean Variety XB17W07 (US2007136863); Soybean Variety XB17U07 (US2007136862); Soybean Variety XB15B07 (US2007136861); Soybean Variety XB12R07 (US2007136860); Soybean Variety XB11J07 (US2007136859); Soybean Variety XB04E07 (US2007136858); Soybean Variety XB02K07 10 (US2007136857); Soybean Variety XB49V07 (US2007136856); Soybean Variety XB48X07 (US2007136855); Soybean Variety 92M75 (US2007136854); Soybean Variety XB48W07 (US2007136853); Soybean Variety XB44G07 (US2007136852); Soybean Variety XB42K07 (US2007136851); Soybean Variety XB42H07 (US2007136850); Soybean Variety XB41J07 (US2007136849); Soybean Variety XB40Y07 (US2007136848); Soybean Variety XB40X07 15 (US2007136847); Soybean Variety XB39E07 (US2007136846); Soybean Variety XB38W07 (US2007136845); Soybean Variety XB38S07 (US2007136844); Soybean Variety XB23V07 (US2007136843); Soybean Variety XB31M07 (US2007130652); Soybean Variety XB28E07 (US2007130651); Soybean Variety XB25S07 (US2007130650); Soybean Variety XB21N07 (US2007130649); Soybean Variety XB03Q07 (US2007130648); Soybean Variety XB49Q07 20 (US2007130647); Soybean Variety XB06M07 (US2007130646); Soybean variety S04-97130-15-02 (US7196249); Soybean variety S04-97026-N99-42648-01 (US7189896); Soybean variety S05-97016-G99-21212 (US7186894); Soybean variety S05-99048-19 (US7164064); Soybean variety 92B14 (US7161065); Soybean Variety 98R31 (US2007006350); Soybean variety S05-97177-N00-22972 (US7132592); Soybean variety XB25G06 (US2006225160); Soybean variety 25 91M70 (US2006174381); Soybean variety XB24R06 (US2006162029); Soybean variety S03-95368-N98-52902 (US7078594); Soybean variety S05-97130-51 (US7078599); Soybean variety XB11L06 (US2006130187); Soybean variety 94B13 (US7064251); Soybean variety 94B74 (US7064250); Soybean variety XB27J06 (US2006112462); Soybean variety XB29N06 (US2006112460); Soybean variety XB28T06 (US2006112459); Soybean variety XB16W06 30 (US2006112458); Soybean variety XB18C06 (US2006112456); Soybean variety XB 10M06 (US2006107391); Soybean variety XB06K06 (US2006107390); Soybean variety XB28V06

(US2006107389); Soybean variety XB004A06 (US2006107388); Soybean variety XB12L06 (US2006107387); Soybean variety XB005A06 (US2006107386); Soybean variety XB25H06 (US2006107385); Soybean variety XB39W06 (US2006107384); Soybean variety XB27K06 (US2006107383); Soybean variety XB29R06 (US2006107382); Soybean variety XB16S06 5 (US2006107381); Soybean variety XB36V06 (US2006107380); Soybean variety XB07N06 (US2006107379); Soybean variety XB23H06 (US2006107378); Soybean variety XB35C06 (US2006107377); Soybean variety XB32L06 (US2006107376); Soybean variety XB58P06 (US2006107375); Soybean variety XB36M06 (US2006107374); Soybean variety XB22G06 (US2006107373); Soybean variety XB36Q06 (US2006107372); Soybean variety 91M61 10 (US2006107371); Soybean variety XB32A06 (US2006107370); Soybean variety XB19V06 (US2006107369); Soybean variety XB43C06 (US2006107368); Soybean variety XB22N06 (US2006107367); Soybean variety XB38E06 (US2006107366); Soybean variety XB37U06 (US2006107365); Soybean variety XB37Q06 (US2006107364); Soybean variety XB00D06 (US2006107363); Soybean variety XB14N06 (US2006107362); Soybean variety XB31H06 15 (US2006107361); Soybean variety XB21Z06 (US2006107360); Soybean variety XB005B06 (US2006107359); Soybean variety XB15W06 (US2006107358); Soybean variety XB33N06 (US2006107357); Soybean variety XB18W06 (US2006107356); Soybean variety XB32M06 (US2006107355); Soybean variety XB19F06 (US2006107354); Soybean variety S03-95021-55- 138-AB (US7026531); Soybean variety 94M41 (US7002061); Soybean variety 91M50 20 (US6998518); Soybean variety 92B13 (US6989475); Soybean variety 93B68 (US6989474); Soybean variety 93B09 (US6979759); Soybean variety 92M00 (US6972352); Soybean variety XB08P05 (US2005120433); Soybean variety XB26V05 (US2005150023); Soybean variety XB21R05 (US2005108795); Soybean variety XB28E05 (US2005114942); Soybean variety XB58K05 (US2005114941); Soybean variety XB27B05 (US2005114940); Soybean variety 25 XB21S05 (US2005150022); Soybean variety XB26U05 (US2005138695); Soybean variety XB35K05 (US2005150021); Soybean variety XB18S05 (US2005120436); Soybean variety XB25C05 (US2005120435); Soybean variety 90M01 (US2005120434); Soybean variety XB22H05 (US2005150020); Soybean variety XB22K05 (US2005114939); Soybean variety XB58G05 (US2005114938); Soybean variety XB57U05 (US2005120432); Soybean variety 30 XB49M05 (US2005120431); Soybean variety XB20D05 (US2005144683); Soybean variety XB41B05 (US2005150019); Soybean variety XB38T05 (US2005120430); Soybean variety

XB13T05 (US2005120429); Soybean variety XB19Y05 (US2005120428); Soybean variety XB43D05 (US2005120427); Soybean variety XB40E05 (US2005120426); Soybean variety XB39N05 (US2005120425); Soybean variety 93M01 (US2005120424); SOYBEAN VARIETY XB31W05 (US2005223439); Soybean variety XB32C05 (US2005114937); Soybean variety 5 XB40D05 (US2005120423); Soybean variety 92M61 (US2005120422); Soybean variety 91M91 (US2005114936); Soybean variety XB33Y05 (US2005120421); Soybean variety XB34A05 (US2005120420); Soybean variety XB13U05 (US2005114935); Soybean variety XB12K05 (US2005114934); Soybean variety XB30P05 (US2005120419); Soybean variety XB57T05 (US2005114933); Soybean variety XB17S05 (US2005114932); Soybean variety XB25Y05 (US2005114930); Soybean variety XB25S05 (US2005150017); Soybean variety XB43W04 (US2004177420); Soybean variety XB44W04 (US2004177419); Soybean variety XB53J04 (US2004199960); Soybean variety XB43V04 (US2004216192); Soybean variety XB49K04 (US2004172668); Soybean variety XB27P04 (US2004205864); Soybean variety XB29L04 (US2004177418); Soybean variety XB29K04 (US2004177417); Soybean variety XB41U04 (US2004231017); Soybean variety XB34D04 (US2004177416); Soybean variety XB09J04 (US2004172711); Soybean variety XB32Y04 (US2004194169); Soybean variety XB44D04 (US2004172710); Soybean variety XB44C04 (US2004172709); Soybean variety XB10L04 (US2004172708); Soybean variety XB19U04 (US2004172707); Soybean variety XB02F04 (US2004172706); Soybean variety XB25X04 (US2004172705); Soybean variety XB26L04 (US2004172704); Soybean variety XB11F04 (US2004172703); Soybean variety XB40Z04 (US2004177415); Soybean variety XB40Y04 (US2004181833); Soybean variety XB007C04 (US2004181832); Soybean variety 96M20 (US2004172702); Soybean variety XB39J04 (US2004172701); Soybean variety XB29A04 (US2004172700); Soybean variety XB35P04 (US2004172699); Soybean variety XB58Z04 (US2004177414); Soybean variety XB43R04 (US2004172698); Soybean variety XB35L04 (US2004172697); Soybean variety XB06H04 (US2004172696); Soybean variety XB59U04 (US2004172695); Soybean variety XB64C04 (US2004172694); Soybean variety 95M80 (US2004172693); Soybean variety XB35Q04 (US2004177413); Soybean variety XB04D04 (US2004177412); Soybean variety XB08L04 (US2004177411); Soybean variety XB18Q04 (US2004177410); Soybean variety XB16Q04 (US2004177409); Soybean variety XB55K04 (US2004172692); Soybean variety XB57M04 (US2004172691); Soybean variety XB25L04 (US2004205863); Soybean variety XB48T04 (US2004172691);

(US2004194168); Soybean variety XB42X04 (US2004199959); Soybean variety XB31T04 (US2004177408); Soybean variety XB31U04 (US2004194167); Soybean variety XB30E04 (US2004177407); Soybean variety XB31R04 (US2004177406); Soybean variety S03-95341-A98-60618 (US6909033); Soybean variety SN97-6946 (US2004168227); Soybean variety 5 94M70 (US6864408); Soybean variety 92M70 (US6797866); Soybean variety 92M71 (US6858782); Soybean variety 91M40 (US6828490); Soybean variety 93M80 (US6849789); Soybean variety XB39N03 (US6864407); Soybean variety 93M90 (US6846975); Soybean variety 90M90 (US6852913); Soybean variety 92M72 (US6960708); Soybean variety 91M90 (US6849788); Soybean variety 92M50 (US6855876); Soybean variety 92M30 (US6951974); 10 Soybean variety 93M60 (US6797865); Soybean variety 93M40 (US6791016); Soybean variety 93M41 (US6835875); Soybean variety XB15P03 (US6797864); Soybean variety XB24H03 (US6936752); Soybean variety XB05A03 (US6815585); Soybean variety 92M80 (US6849787); Soybean variety XB33S03 (US6855875); Soybean variety XB48P03 (US6797863); Soybean variety XB29X03 (US6806406); Soybean variety XB02C03 (US6800795); Soybean variety 15 XB29W03 (US6858781); Soybean variety 91M10 (US6958437); Soybean variety 92M10 (US6916975); Soybean variety XB10G03 (US6806405); Soybean variety 92M31 (US6846974); Soybean variety XB38D03 (US6806404); Soybean variety XB34N03 (US6803508); Soybean variety XB30W03 (US6809236); Soybean variety XB37J03 (US6844488); Soybean variety SE72581 (US2004148665); Soybean variety SE90076 (US2004148664); Soybean variety 20 SD82997 (US2004148663); Soybean variety 0037393 (US2004148662); Soybean variety 0088414 (US2004148661); Soybean variety 0149926 (US2004148660); Soybean variety 0037209 (US2004148659); Soybean variety 93B36 (US6833498); Soybean variety 90B74 (US6812384); Soybean variety 90B51 (US6818809); Soybean variety 91B03 (US6815584); Soybean variety 95B43 (US6818808); Soybean variety 95B42 (US6815583); Soybean variety 25 92B47 (US6812383); Soybean variety SE90346 (US2004055055); Soybean variety 0007583 (US2004010824); Soybean variety 0008079 (US2004010823); Soybean variety S02-AP98041-2-333-01 (US2003121076); Soybean variety S02-98041-2-251-01 (US2003182694); Soybean variety S02-AP98041-2-262-02 (US2003196220); Soybean variety S02-95021-55-240-BA (US2003188348); Soybean variety APA94-31572 (US2003061641); Soybean variety AP98041-30 1-203 (US2003056251); Soybean variety APA95-15294 (US2003061640); Soybean variety AP98041-4-117 (US2003056250); Soybean variety 91B33 (US6580018); Soybean variety

93B85 (US6605762); Soybean variety 92B76 (US6610911); Soybean variety 92B38 (US6605761); Soybean variety 94B24 (US6613967); Soybean variety 94B73 (US6605760); Soybean variety 93B86 (US6610910); Soybean variety 91B12 (US6583343); Soybean variety 95B34 (US6605759); Soybean variety 94B23 (US6605758); Soybean variety 90B11 5 (US6583342); Soybean variety 91B92 (US6586659); Soybean variety 95B96 (US6605757); Soybean variety 93B72 (US6566589); Soybean variety 95B97 (US6613966); Soybean variety 92B95 (US6608243); Soybean variety 93B47 (US6583341); Soybean variety 97B52 (US6605756); Soybean variety 93B15 (US6617499); Soybean variety 94B54 (US6613965); Soybean variety 93B67 (US6573433); Soybean variety 93B87 (US6727410); Soybean variety 10 96B51 (US6613964); Soybean variety 92B84 (US6730829); Soybean variety 92B12 (US6605755); Soybean variety 90A07 (US6320105); Soybean variety 93B26 (US6342659); Soybean variety 96B21 (US6369301); Soybean variety 92B63 (US6326529); Soybean variety 93B46 (US6323402); Soybean variety 92B75 (US6362400); Soybean variety 93B08 (US6323401); Soybean variety 97B62 (US6323400); Soybean variety 92B37 (US6323399); 15 Soybean variety 92B56 (US6339186); Soybean variety 93B66 (US6307131); Soybean variety 92B62 (US6346657); Soybean variety 92B36 (US6369300); Soybean variety 90B73 (US6316700); Soybean variety 95B95 (US6323398); Soybean variety 93B65 (US6229074); Soybean variety 92B24 (US6284950); Soybean variety 94B53 (US6235976); Soybean variety 94B22 (US6140557); Soybean variety 93B84 (US6143956); Soybean variety 95B32 20 (US6229073); Soybean variety 95B53 (US6147283); Soybean variety 93B35 (US6153816); Soybean variety 93B07 (US6143955); Soybean variety 92B74 (US6124526); Soybean variety 92B35 (US6166296); Soybean variety 94B45 (US6162968); Soybean variety 96B01 (US6143954); Soybean variety 93B53 (US6335197).

25 It is observed that the introgression of the elite events into these cultivars does not significantly influence any of the desirable phenotypic or agronomic characteristics of these cultivars (no yield drag) while expression of the transgene, as determined by glyphosate and/or isoxaflutole or glufosinate tolerance, meets commercially acceptable levels.

30 The stacks may be advantageously further combined with one or more other soybean events available in the market, including but not limited to other herbicide tolerance events, such as events described in USDA-APHIS petitions: 09-349-01p, 09-201-01p, 09-183-01p, 09-082-01p,

09-015-01p, 06-354-01p, 06-271-01p, 06-178-01p, 98-238-01p, 98-014-01p, 97-008-01p, 96-068-01p, 95-335-01p, 93-258-01p, (see, e.g., www.aphis.usda.gov/brs/not_reg.html) or event MON89788 (Glyphosate tolerance) described in US 2006-282915, event DP-305423-1 (High oleic acid / ALS inhibitor tolerance) described in WO 2008/054747, MON87701 described in 5 US2009130071, event 3560.4.3.5 described in US2009036308, or event DP-305423-1 described in US2008312082, or event BPS-CV127-9 (Event 127) of WO 2010/080829.

As used in the claims below, unless otherwise clearly indicated, the term “plant” is intended to encompass plant tissues, at any stage of maturity, as well as any cells, tissues, or organs taken 10 from or derived from any such plant, including without limitation, any seeds, leaves, stems, flowers, roots, single cells, gametes, cell cultures, tissue cultures or protoplasts.

Reference seed comprising elite event EE-GM3 was deposited as 32-RRMM-0531 at the NCIMB (Ferguson Building, Craibstone Estate, Bucksburn, Aberdeen AB9YA, Scotland) on 15 October 12, 2009, under NCIMB accession number NCIMB 41659, and the viability thereof was confirmed. An alternative name for EE-GM3 is event FG-072, or MST-FGØ72-3.

Reference seed comprising elite event EE-GM1 was deposited as 32RRMM0368 at the NCIMB (Ferguson Building, Craibstone Estate, Bucksburn, Aberdeen AB9YA, Scotland) on October 12, 20 2009, under NCIMB accession number NCIMB 41658. An alternative name for EE-GM1 is LL27, A2704-12, or ACS-GMØØ5-3.

Reference seed comprising elite event EE-GM2 was deposited as 32CON0688 at the NCIMB (Ferguson Building, Craibstone Estate, Bucksburn, Aberdeen AB9YA, Scotland) on October 12, 25 2009, under NCIMB accession number NCIMB 41660. An alternative name for EE-GM2 is LL55, A5547-127, or ACS-GMØØ6-4.

Reference seed comprising elite event EE-GM3 and EE-GM1 was deposited as 111606 soybean 30 at the ATCC (American Type Culture Collection, 10801 University Blvd., Manassas, Va. 20110-2209, USA) on June 11, 2010, under ATCC accession number PTA-11041.

Reference seed comprising elite event EE-GM3 and EE-GM2 was deposited as 05SHX2XEB Soybean at the ATCC (American Type Culture Collection, 10801 University Blvd., Manassas, Va. 20110-2209, USA) on June 11, 2010, under ATCC accession number PTA-11042.

5 The above description of the invention is intended to be illustrative and not limiting.

Various changes or modifications in the embodiments described may occur to those skilled in the art. These can be made without departing from the spirit or scope of the invention.

SEQUENCE LISTING IN ELECTRONIC FORM

In accordance with Section 111(1) of the Patent Rules, this description contains a sequence listing in electronic form in ASCII text format (file: 77219-42 Seq 17-07-12 v1.txt).

A copy of the sequence listing in electronic form is available from the Canadian Intellectual Property Office.

The sequences in the sequence listing in electronic form are reproduced in the following table.

SEQUENCE TABLE

<110> Bayer Biosciences N.V.
M.S Technologies LLP
MASON Justin Thomas
LETTOW Leslie James
EBY Mark Alan
EBY William H.
WELZ Gunter
VERHAEGHE Steven
DE BEUCKELEER Marc
HABEX Veerle
FERRULO Jean-Marc

<120> Herbicide tolerant soybean plants and methods for identifying same

<130> 58764.C00142

<140> PCTUS201057886
<141> 2010-11-23

<150> EP09014565.7
<151> 2009-11-23

<150> 61/263707
<151> 2009-11-23

<150> 61/367251
<151> 2010-07-23

<160> 22

<170> PatentIn version 3.3

<210> 1
<211> 7296
<212> DNA
<213> Artificial sequence

<220>
 <223> SalI fragment of vector pSF10

<220>
 <221> terminator
 <222> (188)..(479)
 <223> 3?nos: sequence including the 3' untranslated region of the nopaline synthase gene from the T-DNA of pTiT37 of *Agrobacterium tumefaciens* ?complement

<220>
 <221> misc_feature
 <222> (480)..(1556)
 <223> hppdPf W336: the coding sequence of the 4-hydroxyphenylpyruvate dioxygenase of *Pseudomonas fluorescens* strain A32 modified by the replacement of the amino acid Glycine 336 with a Tryptophane - complement

<220>
 <221> transit_peptide
 <222> (1557)..(1928)
 <223> TPotp Y: coding sequence of an optimized transit peptide derivative (position 55 changed into Tyrosine), containing sequence of the RuBisCO small subunit genes of *Zea mays* (corn) and *Helianthus annuus* (sunflower)-complement

<220>
 <221> 5'UTR
 <222> (1929)..(2069)
 <223> 5'tev: sequence including the leader sequence of the tobacco etch virus - complement

<220>
 <221> promoter
 <222> (2070)..(3359)
 <223> Ph4a748 ABBC: sequence including the promoter region of the histone H4 gene of *Arabidopsis thaliana*, containing an internal duplication - complement

<220>
 <221> promoter
 <222> (3360)..(4374)
 <223> Ph4a748: sequence including the promoter region of the histone H4 gene of *Arabidopsis thaliana*

<220>
 <221> Intron
 <222> (4375)..(4855)
 <223> intron1 h3At: first intron of gene II of the histone H3.III variant of *Arabidopsis thaliana*

<220>
 <221> transit_peptide
 <222> (4856)..(5227)
 <223> TPotp C: coding sequence of the optimized transit peptide, containing sequence of the RuBisCO small subunit genes of *Zea mays* (corn) and *Helianthus annuus* (sunflower)

atttcttggc tggtgctgca	6060
attactggag ggactgtgac	6120
tgtggaaagg tggggcacca	6180
ccagttgca gggtgatgtg	6240
aagtttgctg aggtactgga	6300
gatgatggg gcgaaaggta	6360
catgaccga gactagcgt	6420
actgttactg gcccacccg	6480
ggagccattt gggaggaaac	6540
acctaaggc gattgatgtc	6600
aacatqaaca agatgctga	6660
tgtcgccatg actcttgct	6720
tggtgccct cttgcccgt	6780
gccccgacag ccatcagaga	6840
cgtggcttcc tggagaglaa	6900
aggagaccga gaggatggg	6960
cgatccgga cggagctaac	7020
caagctggg gcatctgtt	7080
aggaaggccc ggactactgc	7140
atcatcacgc cggccggagaa	7200
gctgaacgtg acggcgatcg	7260
acacgtacga cgaccacagg	7296
atggcgatgg ctttctccct	
tgccgcctgt ggagggtcc	
ccgtcaccat ccgggaccc	
gggtgeaccc ggaagaccc	
ccccgactac ttcatgtgc	
tgagcacattt cgtcaagaat	
taagctctag aactagtgg	
tcccccgtc cgcttllgtg	
ttttctgggt ttctactta	
agcgctctgc tttacttll	
gtattgggtt tggcgtttag	
tagtttgccg tagcgttctl	
gttatgtgtt attacgctt	
ttcttcttgc ttcaqcgatt	
tcgggtgaaa tataaatcga	
atcaagttt actttatcag	
cgttggtttta aattttggca	
ttaaatttggt gaaaattgt	
tcaattttgt atctaaatag	
aagagacaac atgaaattcg	
acttttgacc tcaaatacttc	
gaacatttat ttcctgattt	
cacgatggat gaggataacg	
aaaggcggt tccatgtcc	
gggaaagtcc ccgtagaaga	
caatgagcaa agctactgaa	
acggggacac gacgtcgat	
tggtacggal atgagttaa	
ccgactcaat tccttattta	
agacataaaac cgatllttgt	
taaagtgtaa cagttagctg	
atataaaaacc gaaacaaacc	
ggtacaagtt tgattgagca	
acttgatgac aaacttcaga	
attttggta ttgatgaaa	
atcatagtct aatcgtaaaa	
aatgtacaga agaaaagcta	
gagcagaaca aagattctat	
attctggttc caatttataca	
tegcttaac gtccctcaga	
tttgcattggg ctgcaggaaat	
taaacgcccc ggcacgtggg	
atcctctaga gtcgac	

<210> 2

<211> 1843

<212> DNA

<213> Artificial sequence

<220>

<223> 5' flanking region of the foreign DNA comprising herbicide tolerance genes in EE-GM3

<220>

<221> misc_feature

<222> (1)..(1451)

<223> 5' flanking plant DNA

<220>

<221> misc_feature

<222> (1452)..(1843)

<223> insert or foreign DNA

<400> 2

gacttccatg tctagattca	60
ttgtactaag atttcaaacg	120
atatatatat aattacatct	180
ttttlalata tggattttat	240
taaaaatcat aaaattaat	300
aaaattaatg aagtttccaa	360
taacatccaa tgatccatc	420
gtaattttaa gactggacta	480
aagaatataag tagtaacact	540
tctcttccaa taatatactt	600
tatggccatgg aggaatagca	660
ttgcccattt gaacttattag	720
gaaagctgaa catcaattgg	780
tacacttgga tggttcccac	
ggtttattat tggctacatc	
tggctacatca agcagaggat	
atatcttcta taactcgaca	
aatcttcgtt gtgcctata	
agagtgtct gtacgactaa	
aacgcttata ataatcgta	
tacaatctat gattcacagt	
tatgatacgt gtatgcaata	
aatgaataga tagataaata	
tgatacaattt atacaattat	
tctaaaat atagaataca	
atatatgtat gtataaaaaa	
ttcataaaaac accaataaagc	
atataattgc aattttgcaa	
aaccaaatta agaataaaac	
tcaaataattt ctagaaacaa	
aaaaaattat aaatcattgt	
tttcataaaat taatllaaag	
tatctacaaa tagaaataat	
atgaatttttataaaaaaaag	
taatataaaat tttattccct	
tcttaaaattt atgaaaaataat	

atacttctat	atttctatac	atgtttctat	acatccgttt	caatgtctga	tagtgatagg	840
aaactctact	gtattttcaa	aagttttttt	ttgttlaaat	atattttttg	tcatgttaatt	900
gtgtgtgttt	tcatttacgt	ccalgtaaaa	agaaaatatt	ttagttctat	taaaatattt	960
tttttatttt	ttatccttaa	aatactttaa	ataatatttt	ttccttattt	aagcattttt	1020
tataattttaa	agcgctattt	aaaacgtttt	tagaataaaa	acataaaaaca	aacacatttt	1080
aaaatgattt	aatatgaaaaa	taaaactaat	gaaaacgaaa	acaataclaa	attacaggaa	1140
agaaaaatatt	attcaaactt	ttatgtttaa	aggttttga	atatttctct	gatgttgg	1200
aaatatgtga	agaaaatttaa	aatatacaagt	agtaggttac	aacagttcqq	gtcaacagt	1260
gactatgaca	gcaagataat	agggccaata	tatttgata	cctctcttaa	gacgtaaaca	1320
ttttgagcga	gaaaataatg	gaaaaaaaaat	aagtcatca	aatgataata	gatataaaaa	1380
ttatttttttta	ttttaaatat	cttattaata	tttttatttt	tttatcatata	tataaatttat	1440
attatattta	tgtagcttt	ctcatgtct	tctacggaa	cttcccgga	cataggaacc	1500
gcccttcgt	tatcctcatc	catcgaaaa	tcagggata	aatgttcgaa	gatttggat	1560
caaaagtgcga	atttcatgtt	gtctttcta	tttagataca	aaattgaagc	aattttcacc	1620
aatttaatgc	caaaatttaa	aacaacgctg	tcctgatttc	acgatggat	aggataacga	1680
aaggccggtt	cctatgtccg	ggaaagttcc	cgttagaagac	aatgagcaaa	gctacigaaa	1740
cgggacacg	acgtcgatt	ggtacggata	tgagttaaac	cgactcaatt	cctttattaa	1800
gacataaaacc	gattttggtt	aaagtgttaac	agttagctga	tat		1843

<210> 3

<211> 1408

<212> DNA

<213> Artificial sequence

<220>

<223> 3' flanking sequence of foreign DNA comprising herbicide tolerance genes in EE-GM3

<220>

<221> misc_feature

<222> (1)..(240)

<223> insert or foreign DNA

<220>

<221> misc_feature

<222> (241)..(1408)

<223> plant DNA

<400> 3

taacagttag	ctgatataaa	accgaaacaa	accggcacaa	gtttgattga	gcaacttgat	60
gacaaaacttc	agaattttgg	ttatttgaatg	aaaalcatag	tctaattcgta	aaaaatgtac	120
agaagaaaaag	ctagagcaga	acaaagattc	tatattctgg	ttccaattta	tcatcgctt	180
aacgtccctc	agatttgc	qggctgcagg	aattaatgt	gttcatccgt	cttttgttta	240
atgcggcat	caatacgatc	ctcaaaagatt	gccaataga	ttaatgtgg	tcatctccct	300
atatgttttgc	tttgcattca	calgtttatt	gctccaaact	aattataata		360
aaatgtactt	caaattgtt	gtgttgacat	tctttcaaa	ttgttcgtg	aagaaaagat	420
aatctcgagg	ccttgcatttgc	ttaatgttt	cattaataaa	taaataaaat	aactcttcc	480
aaatttcaat	tcatgtttt	atattgtgt	gttcatccct	atcttatgtc	actattatca	540
tttgcatttt	gagactttac	ttggccat	ttgagaagac	cttcttcatt	ataggcaatt	600
ttatctccac	aataatataa	gagaatatact	tgaattaata	attattgagg	atatattata	660
gggttctatg	tttgcatttt	tttgcatttt	tttgcatttt	tttgcatttt	tttgcatttt	720
tttatttgc	cacgaggcga	cgcgacttgt	atttatttttgc	gattgtact	tttgcgtgag	780
cagttggct	ctatgttgg	gcctccactt	gttgggtgtt	tatataatgt	aaaggaggat	840
gaggtgtat	gttgcatttt	tttgcatttt	tttgcatttt	tttgcatttt	tttgcatttt	900
gttttgcatttt	tttgcatttt	tttgcatttt	tttgcatttt	tttgcatttt	tttgcatttt	960
tatgtgtat	gataatcacc	caattaatgt	acatctgg	tgggtttga	atttgcatttt	1020

cattaattaa tattcctc tt ggtqaagttt ggagttcttt tgcaattaca attctgtttt	1080
gtaagtgatt atgatggact tttagatgtt tctcaaacag taggtgtaaa gaaaaatggg	1140
ccctggatg aaaatttgtt ttcaactctt ctcattcata tctttaaaaa aagaatgata	1200
attttgtaat aaaaataaaaaa aaatattaaa tatttctca aatcaaacaa cctttatTTT	1260
ttatgccaac aataattttg ttaaagatgg agatttcaat tattatataa gagttcatta	1320
tagtgaaaaa ttgaatgaat gtatatgttt acgttttttg tctcaaglga aactaagatc	1380
aaatattcat atctattgag ctggcattt	1408
<210> 4	
<211> 20	
<212> DNA	
<213> Artificial sequence	
<220>	
<223> primer SOY028	
<400> 4	
atcgctttaa cgtccctcag	20
<210> 5	
<211> 18	
<212> DNA	
<213> Artificial sequence	
<220>	
<223> primer SOY029	
<400> 5	
caaggcctcg aqatttac	18
<210> 6	
<211> 20	
<212> DNA	
<213> Artificial sequence	
<220>	
<223> primer SMP187	
<400> 6	
atatcaaccc gtagctcgac	20
<210> 7	
<211> 23	
<212> DNA	
<213> Artificial sequence	
<220>	
<223> primer STV019	
<400> 7	
ggcattaaat tggtaaaaat tgc	23

<210> 8
 <211> 263
 <212> DNA
 <213> Artificial sequence

<220>
 <223> nucleotide sequence of PCR amplicon using primers SOY028 - SOY029

<400> 8
 atcgcttaa cgtccctca tagtgcgg qctgcaggaa ttaatgtgg tcatccgtct 60
 ttttgttaat gcggtcatca atacgtgcct caaagattgc caaatagatt aatgtggttc 120
 atctccctat atgtttgtc tgttggatt tgctatcaca tggttattgc tccaaactaa 180
 ttataataaa atgactttca aatgattggt gttgacattc tttcaatt gttcgctgaa 240
 gaaaagataa tctcgaggcc ttg 263

<210> 9
 <211> 20
 <212> DNA
 <213> Artificial sequence

<220>
 <223> primer 1 for amplification of control fragment (SOY01)

<400> 9
 gtcagccaca cagtgcctat 20

<210> 10
 <211> 20
 <212> DNA
 <213> Artificial sequence

<220>
 <223> primer 2 for amplification of control fragment (SOY02)

<400> 10
 gttaccgtac aggtctttcc 20

<210> 11
 <211> 4076
 <212> DNA
 <213> Artificial sequence

<220>
 <223> nucleotide sequence of pb2/P35SACK

<220>
 <221> promoter
 <222> (461)..(1003)
 <223> CamV35S promoter sequence

<220>
 <221> misc_feature
 <222> (1004)..(1011)
 <223> synthetic coding sequence for phosphinoacetyltransferase

<220>
 <221> misc_feature
 <222> (1582)..(1784)
 <223> CaMV 35S terminator

<400> 11

tcgcgcgtt	cggtgatgac	ggtaaaaacc	tctgacacat	gcagctcccg	gagacggtca	60
cagcttgc	tct gtaa	cggt gccggg	ggagca	gacaaggcccg	tcaggcg	120
ttggcggt	gttggggct	ggat cttaa	actatg	cggtcaga	gcagatgt	180
accatatgc	aacaaacata	cacagcgact	taa	gctcaaa	ttacaacggt	240
ccacatatgc	ggtgl	gaaaat	accgcacaga	tgcgtaa	gaaaataccg	300
cattcgccat	tcaggctgc	caactgtt	ggaa	ggcqat	cggtgcggc	360
ttacgc	cagg	ggatgt	gca	agqcgat	taagtgggt	420
ttttcc	cacgac	gttgg	aaaacgacg	gccc	atggag	480
aaatagag	ccta	ccatgg	gttgg	atccatgg	tcgg	540
tacgact	caa	tttgc	tttgc	tttgc	tttgc	600
actccaaa	tatcaaa	agatct	tttgc	tttgc	tttgc	660
aaaggta	atccg	tttgc	tttgc	tttgc	tttgc	720
tgaagat	ggaa	ggatgt	tttgc	tttgc	tttgc	780
ccatcg	atgc	tttgc	tttgc	tttgc	tttgc	840
gcategt	ggaa	ggatgt	tttgc	tttgc	tttgc	900
tctccact	gttcc	tttgc	tttgc	tttgc	tttgc	960
tataagga	tttgc	tttgc	tttgc	tttgc	tttgc	1020
qagagg	tttgc	tttgc	tttgc	tttgc	tttgc	1080
atcgtaacc	tttgc	tttgc	tttgc	tttgc	tttgc	1140
caagagt	tttgc	tttgc	tttgc	tttgc	tttgc	1200
gttgggt	tttgc	tttgc	tttgc	tttgc	tttgc	1260
gattgg	tttgc	tttgc	tttgc	tttgc	tttgc	1320
tccacatt	tttgc	tttgc	tttgc	tttgc	tttgc	1380
gctgttat	tttgc	tttgc	tttgc	tttgc	tttgc	1440
gccccgg	tttgc	tttgc	tttgc	tttgc	tttgc	1500
tggcaa	tttgc	tttgc	tttgc	tttgc	tttgc	1560
tgatcg	tttgc	tttgc	tttgc	tttgc	tttgc	1620
ctctataa	tttgc	tttgc	tttgc	tttgc	tttgc	1680
ctcatgt	tttgc	tttgc	tttgc	tttgc	tttgc	1740
tcaataaa	tttgc	tttgc	tttgc	tttgc	tttgc	1800
acccgg	tttgc	tttgc	tttgc	tttgc	tttgc	1860
ctctaga	tttgc	tttgc	tttgc	tttgc	tttgc	1920
gctgtt	tttgc	tttgc	tttgc	tttgc	tttgc	1980
cataaa	tttgc	tttgc	tttgc	tttgc	tttgc	2040
ctca	tttgc	tttgc	tttgc	tttgc	tttgc	2100
acgcgc	tttgc	tttgc	tttgc	tttgc	tttgc	2160
gctgc	tttgc	tttgc	tttgc	tttgc	tttgc	2220
gttat	tttgc	tttgc	tttgc	tttgc	tttgc	2280
taccgg	tttgc	tttgc	tttgc	tttgc	tttgc	2340
ctgt	tttgc	tttgc	tttgc	tttgc	tttgc	2400
cccg	tttgc	tttgc	tttgc	tttgc	tttgc	2460
cccg	tttgc	tttgc	tttgc	tttgc	tttgc	2520
aaaaatcg	tttgc	tttgc	tttgc	tttgc	tttgc	2580
ataccagg	tttgc	tttgc	tttgc	tttgc	tttgc	2640
taccggata	tttgc	tttgc	tttgc	tttgc	tttgc	2700
ctgttag	tttgc	tttgc	tttgc	tttgc	tttgc	2760
cccg	tttgc	tttgc	tttgc	tttgc	tttgc	2820
aagacac	tttgc	tttgc	tttgc	tttgc	tttgc	2880
tacgc	tttgc	tttgc	tttgc	tttgc	tttgc	2940
tcagtg	tttgc	tttgc	tttgc	tttgc	tttgc	3000
cacctag	tttgc	tttgc	tttgc	tttgc	tttgc	3060
aacttgg	tttgc	tttgc	tttgc	tttgc	tttgc	

atttcgttca	tccalagttg	cctgactccc	cgtcgtgtag	ataactacga	tacgggaggg	3120
cattaccatct	ggcccccagt	ctgcaatgat	accgcgagac	ccacgctcac	cggctccaga	3180
tttatcagca	ataaacaccgc	cagccgaaag	ggccgagcgc	agaagtggc	ctgcaacttt	3240
atccgcctcc	atccagtcta	ttaattgtt	ccgggaagct	agagtaagta	gtlgeccagt	3300
taatagtttt	ogcaacgtt	ttgccattgc	tacaggcatc	gtgggtcac	gctcgtcg	3360
tggatggct	tcattcagct	ccgggtccca	acgatcaagg	cgagttacat	gatccccat	3420
gttgcacaa	aaagcggta	gctccctcgg	tcctccogatc	gttgcagaa	gtaagttgc	3480
cgcagtgtt	tcactcatgg	ttatggcagc	actgcataat	tctttactg	tcatgccatc	3540
cgtaaagatgc	ttttctgtt	ctggtgagta	ctcaaccaag	tcattctgag	aatagtgtat	3600
gccccgaccc	agttgtctt	gcccggcgc	aatauuggat	aataccgcgc	cacatagcag	3660
aactttaaaa	glgctcatca	ttggaaaacg	ttcttcgggg	cgaaaactct	caaggatctt	3720
accgtgtt	agatccagg	cgatgtacc	cactgtgc	cccaactgtat	cttcagcato	3780
ttttacttcc	accagegtt	ctgggtgagc	aaaaacacgg	aggcaaaatg	ccgaaaaaaa	3840
gggaataagg	gacacacgga	aatgtgaat	actcatactc	ttccctttt	aataltattt	3900
aagcatttat	cagggttatt	gtctcatgag	cgatatacata	tttgaatgt	tttagaaaaaa	3960
taaacaata	gggggtccgc	gcacatttcc	cgaaaaatg	ccacctgtac	tctaaagaaac	4020
cattaltatc	atgacat	tttataaaaa	taggcgtatc	acgaggccct	ttcg	4076

<210> 12
 <211> 720
 <212> DNA
 <213> Artificial sequence

<220>
 <223> nucleotide sequence comprising the 5' region flanking the foreign DNA in EE-GM1

<220>
 <221> misc_feature
 <222> (1)..(209)
 <223> plant DNA

<220>
 <221> misc_feature
 <222> (210)..(720)
 <223> foreign DNA

<400> 12
 gagaagaaaa aggaaggcat taagagaccc tccgtgcaca accctagaca ctctaagatc 60
 ctttttcaaa cctgtccca ccatttcgag taaagagata gateaataga cacatctat 120
 tgcacccgatc gggggcgttc gtagtgactg aggggggtcaaa agaccaagaa gtgagttatt 180
 tatcagccaa gcattctatt cttcttatgt cggtgccgggc ctcttcgcta ttacgcccagc 240
 tggccaaagg gggatgtgtct gcaaggcgat taagtgggt aacgcccaggg tttcccagt 300
 caacgttgc taaaacgacg gccagtgaat tccatggac tcaaagattc aaatagagga 360
 cctaacagaa ctcgcgtaa agactggcga acagttcata cagagtctct tacgactcaa 420
 tgacaagaag aaaatcttcg tcaacatggt ggagcacgac acgcttgcactccaaaaaa 480
 tatcaaagat acgtctcag aagaccaag ggcaatttgag actttcaac aaaggtaat 540
 atccggaaac ctccctcgat tccatgtccc agctatulgl cactttattt tgaagatagt 600
 ggaaaaaggaa ggtggcgcct acaaattgcca tcattgcgtat aaaggaaagg ccatcgttga 660
 agatgcctct gcccacatgt gttccaaaga tggacccccc cccacgagga qcatcgttga 720

<210> 13
 <211> 1000
 <212> DNA
 <213> Artificial sequence

<220>
 <223> nucleotide sequence comprising the 3' region flanking the foreign DNA in EE-GM1

<220>
 <221> misc feature
 <222> (1)..(568)
 <223> foreign DNA

<220>
 <221> misc feature
 <222> (569)..(1000)
 <223> plant DNA

<400> 13

ttcggtgttag	gtcggtcgct	ccaagctggg	ctgtgtgcac	gaaccccccgg	ttcagcccgaa	60
cccgctgcggcc	ttatccggta	actatcgtct	tgagtccaaac	ccggtaagac	acgacttata	120
gccactggca	gcagccactg	gtaacaggat	tagcagagcg	aggtagatgt	gcgggtctac	180
agagttcttg	aagtggtgcc	ctaactacgg	ctacactaga	agaacagtat	ttgttatctg	240
cgctctgtcg	aagccagttt	ccttcggaaa	aagagtttgtt	agclcttgat	ccggcaaaaca	300
aaccacccgt	ggtagcgglg	gtttttttgt	tttcaagcag	cagattacgc	gcagaaaaaaa	360
aggatctcaa	gaagatccctt	tgatcttttc	tacgggggtct	gacgctca	ggaacgaaaa	420
ctcacgttaa	gggattttgg	tcatgagatt	atcaaaaagg	atcttcaccc	agatcctttt	480
aaataaaaaa	tgaagttta	aatcaatcta	aagtatata	gagtaaaactt	ggtctgacag	540
ttaccaatgc	ttaatcgtg	aggcaccttt	aatctagatg	atctgtctca	actttaccaa	600
aagtttttag	cacatgtttg	gattcacctt	aaataatcta	aaatcacagc	ttttttgatc	660
ccaaaggagt	taattctaag	taaaattgtat	ttagttaaaa	caattgtgtt	agatagaqaa	720
attttcttg	aataaaaaca	tctagacaca	aatcatttca	cttcaaaaata	atttaaaca	780
aaataaaattt	tgcaattcat	tcatccaaac	aaacatttga	attaactata	atcaattcaa	840
attgttacag	tgtgttgcatt	tcatatcatt	cctaataagt	ctacattaaa	gattaagagt	900
gagaatgaga	ggaagagaga	acggtttcag	ggttaaccct	ttgtttggaa	gaaccatcaa	960
acagtggcaa	cggatcatcc	ttgctgcaaa	acatagcttt			1000

<210> 14
 <211> 810
 <212> DNA
 <213> Artificial sequence

<220>
 <223> nucleotide sequence comprising the 5' region flanking the foreign DNA in EE-GM2

<220>
 <221> misc feature
 <222> (1)..(311)
 <223> plant DNA

<220>
 <221> misc feature
 <222> (312)..(810)
 <223> foreign DNA

<400> 14

gtcatcgatcg	tcgcgtgtgg	gttcttgcgg	tgccgctgg	cgcaactggag	tttgggtgtt	60
gttgcgtatcg	cttgcgtgtc	taatccctt	ttgtatgcga	aaatcggtt	tgggtcggtt	120
cgggtcagcc	caacacgacc	taatttgcgt	tacgaaaattt	tcaacaaaaaa	aaaaaagtta	180

tcttccggca	ttatcgccat	tccgccacga	tcattaaaggc	tatggcgcc	gcaatggcgc	240
cgcccatatga	aaccggcaat	gccatcgcta	tttgggtggca	tttttccaaa	aaccggcaat	300
gtcataccgt	catcggtgtc	agaagtaagt	tggccgcagt	gttatcactc	atggttatgg	360
cagcactgca	taatttotctt	actgtcatgc	catccgtaaag	atgtttttct	gtgactggtg	420
aqtaactcaac	caagtcattc	tgagaatagt	gtatggggcg	accgagttgc	ttttggccgg	480
cgtcaatacg	ggataatacc	gcgcacata	gcagaacttt	aaaagtgc	atcattggaa	540
aacgttcttc	ggggcgaaaa	ctctcaagga	tcttaccgc	gtttagatcc	agttcqatgt	600
aacccactcg	tgcacccaaac	tgtatttcag	catctttac	tttaccaggc	gtttctgggt	660
gagcaaaaac	aggaaggcaa	aatggcgcaa	aaaagggaaat	aacggccagg	ttttcccaagt	720
cacgaogttg	taaaacgacg	gccagtgaat	tcccatggag	tcaaagattc	aaatagagga	780
cctaacaagaa	ctcgccgtaa	agactggcga				810

<210> 15
<211> 1880
<212> DNA
<213> Artificial sequence

<220>
<223> nucleotide sequence comprising the 3' region flanking the foreign

```
<220>
<221> misc_feature
<222> (1)..(507)
<223> foreign DNA
```

<220>
<221> misc_feature
<222> (508)..(1880)
<223> plant DNA

cttacagtta ttaacgaaga attatataagg acacttgtgg tggggtagc tagggatgac	1500
ttcatac: lga caatgcaga acaagagcta aattaggggg atgtctgtct gtttcatat	1560
tgtacttttc cattttacag ttaattgata tattttttt tattaatgtg acgatccag	1620
attacttact ggctaagaaa taagaaataa aatgattta aatataatttt tagtcaagt	1680
ctgtatTTTT tagttccca aattaaaatt tgatTTTT aatctctcat ttataaaatg	1740
ccttttaag ttctclictag ctgattttg gcaacttggga tgcacaatgt gcaactatcg	1800
taacaatatt tttcttgaaa tttaaagaga ctaaaatata tttttacca taacactcat	1860
tttagtaaaa ccattatttg	1880

<210> 16
 <211> 20
 <212> DNA
 <213> Artificial sequence

<220>
 <223> primer SOY06

<400> 16
 ggcgttcgta gtgactgagg

20

<210> 17
 <211> 21
 <212> DNA
 <213> Artificial sequence

<220>
 <223> primer SOY 07

<400> 17
 gttttacaac gLcgtgactg g

21

<210> 18
 <211> 21
 <212> DNA
 <213> Artificial sequence

<220>
 <223> primer SOY 09

<400> 18
 tgtggttatg gcggtgccat c

21

<210> 19
 <211> 21
 <212> DNA
 <213> Artificial sequence

<220>
 <223> SOY 010

<400> 19
 tgctacaggc atcgtggtgt c

21

<210> 20
 <211> 17806
 <212> DNA
 <213> Artificial sequence

 <220>
 <223> nucleotide sequence of a foreign DNA and flanking plant sequences
 in EE-GM3

 <400> 20

gacttccatg	tctagattca	ttgtactaag	atttcaaacg	atatatatat	atatatatat	60
atatatattc	aattacatct	tttcaaaaa	acatatatgc	atcgatttt	ctaatacatt	120
tttttatata	tgttattagt	taaaattat	taaaaatcat	aaaattaagt	aagtttcaca	180
taacatccaa	tgatttctc	gtattttaa	gactggacta	aagaatalag	tagtaacact	240
tctttcaaa	taatatactt	tatggcccg	aggaatagca	ttgccattt	gaactattag	300
gaaagctgaa	catcaatgg	tacacttgg	tgttccac	ggttattat	tgtctacatc	360
tggcatcca	agcagaggtt	atatcttcta	taactcgaca	aatttcgtt	gtgcctatat	420
agagttgctt	gtacgactaa	aacgcttata	ataatcgtt	tacaatctat	gattcacagt	480
tatgatacgt	gtatgcaata	aatgaataga	tagataaata	tgatacaattt	atacaattat	540
tctaaaatat	atagaataca	atatatgtat	gtataaaaaa	ttcataaaaac	accaataaagc	600
atataattgc	aattttgcaa	aaccaaatta	agaaataaac	tcaaataatta	ctagaaacaa	660
aaaaaaatla	aaatcattgt	cttcataaat	taattctaag	tatctacaaa	tagaaataat	720
atgaatttta	tataaaaaag	taatataat	tttattcatt	tcttaaattt	atgaaaataa	780
atacttctat	atttctatac	atgtttctat	acatgcgtt	caatgtctga	tagtgatagg	840
aaactctact	gtatttcaa	agttttttt	ttgtttaat	atattlltg	tcatgttaatt	900
gtgtgtgttt	tcatttacgt	ccatgtaaaa	agaaaaatatt	ttagttctat	aaaaatattt	960
tttttatttt	ttatccttaa	aatactttaa	ataatatttt	ttcctattt	aacattttt	1020
tataattttaa	agcgcttatt	aaaacgtttt	tagataaaaa	acataaaaca	aacacatttt	1080
aaaatgattt	aatatgaaaaa	taaaactaat	gaaaacgaaa	acaataactaa	attacaggaa	1140
agaaaaataat	attcaaactt	ttatgtttaa	aggtttttga	atatttctt	gattcggtt	1200
aaatatgtga	agaaaattaa	aatatcaagt	atgtgttac	aacagtcgg	gtcaacagt	1260
gactalgaca	gcaagataat	agggccaata	tatggata	cctctcttaa	gacgtaaaca	1320
ttttgagcga	gaaaataatg	gaaaaaaaat	aagtcatca	aatgataata	gatataaaaa	1380
ttatttttta	ttttaaatat	cttattaata	tttttatttt	tttattcatat	tataaattat	1440
attatattta	tgtagcttgc	ctcattgtct	tctacggaa	ctttccggaa	cataggaacc	1500
gcccttctgt	tatcctcata	catcgtaaa	tcaggaaata	aatgttcgaa	gatttgaggt	1560
caaaggatcga	atttcatgtt	gtctttcta	tttagatata	aaattgaagc	aatttcacc	1620
aattaatgc	caaattttaa	aacaacgctg	tcctgattt	acgatggatg	aggataaacga	1680
aagggcgggt	cctatgtccg	ggaaagtcc	cgtagaagac	aatgagcaaa	gotactgaaa	1740
cgccggacacg	acgtcgccatt	ggtaoggata	tgagttaaac	cgactcaatt	cctttattaa	1800
gacataaaacc	gatttgggtt	aaagtgttaac	agtgagctga	tataaaaccg	aaacaaaccg	1860
gtacaagttt	gattgagcaa	cttgatgaca	aacttcgaa	ttttggttat	tgaatgaaaa	1920
tcatagtcta	atcgtaaaaa	atgtacagaa	gaaaagctag	agcagaacaa	agattctata	1980
ttctggttcc	aatttatcat	cgctttaacg	tcctcagat	ttgatcgggc	tgcaggaaat	2040
aaacggcccg	gcacgtggga	tcctttagag	tcgactctag	cagatctggc	cgccccacccg	2100
gtggggccata	tgggcccgcg	gccgogaatt	cgagctcggt	acctacctgg	cqaaagggggg	2160
atgtgtctgca	aggcgattaa	gttggtaac	gccagggtt	tcccgatcac	gacgttgtaa	2220
aacgacggcc	agtgaatttgc	ggcogcaatt	cccgatctag	taacatagat	gacaccgcgc	2280
gacgataattt	atcctagtt	gcgogctata	ttttgtttttc	tatcgctat	taatgtata	2340
attgcgggac	tcttaalcata	aaaaccctc	tcataaataaa	cgtcatgtat	taatgtttaa	2400
ttattacatg	cttaacgtaa	ttcaacagaa	attatatgtat	aatcatcgca	agacccggcaa	2460
caggattcaa	tcttaagaaa	ctttattgccc	aaatgtttga	acgatcgccc	aaattcgtcg	2520
agtcaccctc	ggccgggctt	tttgacgctt	aatcgccgtt	caatacacca	cgacgcaccc	2580
ggtcacgttc	gatggactcg	aacagcgcct	tgaagtccca	ctcgccaaac	ccatcgccgc	2640
ccttgcgttg	gatgaatttgc	aagaacaccg	ggcccatcg	ggtttccgag	aatatctgca	2700
gcagcaggcg	tttgcgcctc	tccacggaaag	atccgtccag	caggataccg	cgtgcctgca	2760
tttgatccac	cggctcgccg	tggtcaggca	ggcggcccttc	gagcatttcg	taataagtgt	2820

ctggcggcgc ggtcatgaag cgcacatgcga ttttcttcaa cgcgtcccag gtcttgcacca 2880
 ggtcgctggt gaggaacgcg acgtgtcgga tgccttcgco gttgaactgc atcaggaact 2940
 cttcgatctg ccccgccccc ttggacgact cttcgatcg cgggatgcgg atcatgcgcgt 3000
 cccgcgcact catggccttg gaagtcaggc cgggtactc gcccgtata tgcgtacaa 3060
 gcgcgttcacg gaagttgaac aatttctcgta agaagttggc ccagtagacc atgcggccgc 3120
 gatagacgtt gtgggtcagg tggtcgtatc ctttgagacc tgcaccgacc ggattgcgcgt 3180
 ccacacccctc gaggtacacg aagtgcgtgt cgtagatcga gctgccttcg ccgaaacgg 3240
 cgatcaggta caacggcgcg cggccatgc cttgtatcgc cggcagggtc aattccatcg 3300
 gcccgtgtc aatatggatc ggctggcgc cgagttccag ggcgggggtt taggccttt 3360
 gcgagtccctt caccggaaac gccatgcgc acaccgacgg gccgtgttcg gcccgtaaagt 3420
 aggaggcgat gctgtgggc tgggtgttga ggatcagggtt gatctcgccc tggcggtaca 3480
 ggtgcacgtt ttggaaacgg tgggtcgca ctttggtga gcccgtatc tgcgtacatcg 3540
 gctcagggtt accccggcgtc ggcgtacgcg attcgtatc ttcaaaagccc atcaggccc 3600
 ttgggttttc gtatagatct gccatgcacc ggatccttcg gccgtgttcg acgttgcgcg 3660
 ggctctggta ggacggcgg ggcgtggcggt ggacttgcgc cccatggaaacg 3720
 gagcgtacggc ggtggccgac gaggccatca tgcgtggg cgcgtatc aagccggcgc 3780
 ggtacgtacag cgtctcgac ttcttgggtc cgtaggccgg ccacacccgtc atatattgaa 3840
 ctcttcacc gttgtggga aggggtggaga agtcgttagc ttcttgggtc gtggggaaagg 3900
 cggcgttggta cttaaaggccc gtgtacggag ccaccatgtt ggcgtgagca gggcggtcc 3960
 ggctaaacggt cgcgtactgag gaggagatcg aagccatggc tatacgatcgaaatgggtaa 4020
 aatttcaga aatttgcgtt tgctttaaaa gaaatgattt aatttgcgtc aatagaagta 4080
 gaatgttga tgcgttggaa ttgcgttggtt ttgtatgtt tgcgttggaa attcttaggt 4140
 cgagagaaat tgatgtctgtt aagaagaa gaaacggtaa gatgttggaaatgggtggaa 4200
 gatgtgaaat tgttttataa ggcaaaagacg gagatgttat tttttgagca atcagatcg 4260
 atattaaatc taacggctgtc gatatcgatc cgtgtgtaca ataaaatgtat gtataaaacgg 4320
 tcgcgttgcgtt ttaatcgacg gttcatatcgtt gtgtccgcg tgatggcgt gatagccact 4380
 aagaatcgtc ttgtttttta catgtggcgc cacaattttt ggtatgtaa cgcaatatt 4440
 ttggaaactcg gaaaataaaa ttgcgtccatc acatttttgcgaaaatttca catgtttta 4500
 tttttaaaac ccacgtatc caagtacaa cggaaaaaaga tttataatat agtattttat 4560
 actaatttttgcgtt tagtagctt atgttatattt atactggaaa aacaatgaca atcataatcg 4620
 atccgtgtgtt acaataaaaat gatgtataaa cccgtcgatct ttgcgttgcgtt acgttgcata 4680
 ttgtgtatcc ggcgtatggc agtgcgtatcc actaagaatc gtctttgtt ttacatgtgg 4740
 cgcacacaaat taggtatcg aagcggcaat tttttggaaatc tggaaaataa aatttgcgc 4800
 atcacattat ttgaaaattt tcacatgtt ttattttaaaa aacccacggaa ttacaagtta 4860
 caacccggaaaa agatttataa tatagtgttataa tatactaaat ttgttagtgc ttaatgtata 4920
 ttgtatctgg aaaaacaatc acaatcataat gttgtatcata tcaagtatcgtt gttatgtat 4980
 tgatatttgcgtt acatcataatc ggtatttgcgtt ttcttcgcacccatc ccaaaatttac 5040
 aaagtttgcgtt tataccaaatg tataatttttgcgtt aaatgggtatc tcaacattttt aatttccctt 5100
 tgagaaacta tagaccacaa gacacacactt caatagatata agtacttacatcataagag 5160
 gttttaaaat cacattaaca aaaataatc ccaacccggca ctcacaaata caaacagacg 5220
 acacgacatc tcaaaaggccac aagtaatcgtt gttgtgtggt ggtttcattt caatttgcgtt 5280
 acttgcacgc caaaactatct tgctgtggta atcatctcgat catgtatcact 5340
 tcaggggacat ttgtgtatc catgcgtcgat ctcatatttc ttctcgatccgttgc 5400
 aagctctaga gcccggcgc cccgggtggta ggtactcgatc tgcgtacgttgc cgttgcacca 5460
 attgttttgcgtt aaagcttgcgtt tgcgttgcagg tggaggaaat atatgtatcg aggtatcgat 5520
 acactaagtt cccctgtatc gggatgtatc tttgtatcgatc tttgtatcgatc cagacgtatc 5580
 tagtttgcgttgc tgcgtatcgatc acaatttgcgtt tggaaacccaccatcactaacgcgaa 5640
 gttttgcgttgc tgcgtatcgatc tttgtatcgatc tttgtatcgatc tttgtatcgatc 5700
 taatgtgttgcgtt taaaacccatc tttgtatcgatc tttgtatcgatc tttgtatcgatc 5760
 tggtctatcgatc tttctcgatc acaatttgcgtt tggaaacccaccatcactaacgcgaa 5820
 tggtatacacc acaatttgcgtt tttgtatcgatc tttgtatcgatc tttgtatcgatc 5880
 tttgtatcgatc tttgtatcgatc tttgtatcgatc tttgtatcgatc tttgtatcgatc 5940
 ttttttccatc tttgtatcgatc tttgtatcgatc tttgtatcgatc tttgtatcgatc 6000
 taaaatcttttgcgtt tttgtatcgatc tttgtatcgatc tttgtatcgatc tttgtatcgatc 6060
 tttttcaatc tttgtatcgatc tttgtatcgatc tttgtatcgatc tttgtatcgatc 6120
 tttttcaatc tttgtatcgatc tttgtatcgatc tttgtatcgatc tttgtatcgatc 6180
 tttttcaatc tttgtatcgatc tttgtatcgatc tttgtatcgatc tttgtatcgatc 6240

ttattgtaca cacggatcga tatctcagcc gttagattta atatgcgtc tgattgctca 6300
aaaaatagac tctccgtctt tgcctataaa aacaatttca catctttctc acccaaatct 6360
actcttaacc gttcttcttc ttctacagac atcaatttct ctcgactcta gaggatccaa 6420
gettatcgat ttcgaacccc tcaggcgaag aacaggtatg atllgtttgt aattagatca 6480
ggggtttagg ttttccatt actlltaat gtttttctg ttactgtctc cgcgatctga 6540
tttacgaca atagagttt gggtttgc ccattecaqt ttgaaaataa aggtccgtct 6600
tttaagttt ctggatcgat aaacctgtga agattgagtc tagtcgattt attggatgat 6660
ccattcttca tcttgcgtca agttctgtat aaccagattt gtcgtgtgc 6720
gattgtcatt acctagccgt gtatcgagaa ctagggtttt cgagtcaatt ttgcccctt 6780
tggttatate tggttcgata acgtttccatc tggattaggg ttttaagtgg tgacgtttag 6840
tattccaatt tcttcaaaaat ttagttatgg ataatgaaaa tccccaattt actgttcaat 6900
ttctgttaa atgcgcagat cccatggct togatctct ctcagtcgc gaccgttage 6960
cgaccgccc ctgctcaggc caacatggt gtcgttca cccgcttaa gtccaacgccc 7020
gcctcccca ccaccaagaa ggcttaacgac ttotccaccc ttcccaagca cgggtggaaaga 7080
gttcaatgtt tgcagggtgt gcccggctac ggcacaacaaga agttcagagac gctgtcgatc 7140
ctgcccggc tgcgtatgtc gcccaccgtg atgatggcct cgtcgccac cgcctcgct 7200
ccgllccagg ggctcaagtc caccggcagc ctcccccgtcg cccggctc ctcagaaga 7260
ctcgcaacg tcagcaacgg cggaggatc cgggtcatgg cggccggcga ggagatcg 7320
ctqcgccca tcaaggagat ctccggcacc gtcagactgc cgggttccaa gtcgccttcc 7380
aacccgatcc tcctactcgc cggccgtcc gaggggacaa cagtggtga taacctgtc 7440
aacagtgagg algtccacta catgctcggg gcttgagga ctcttgcgtct ctetgtcgaa 7500
gcggacaaag ctgccaaaag agctgttagt gtggctgtg gtggaaagtt cccagttgag 7560
gatgctaaag aggaagtgtca gctcttctt gggaatgtg gaatcgtcaat gcggttctt 7620
acagcagctg ttactgtgc tggtgaaat gcaacttacg tgcttgatgg agtaccaaga 7680
atgagggaga gaccattgg cgacttggg gtggatlga agcagcttgg tgcatgtt 7740
gattgttcc ttggactga ctgcccaccc gtcgtgtca atggaatcgg agggttaccc 7800
ggtgcaagg tcaagctgtc tggctccatc agcagtcgtt acttgagtgc cttgtgtatg 7860
gctgtctt tggctttgg ggatgtggag attgaaatca ttgataaatt aatctccatt 7920
ccgtacgtcg aaatgacatt gagattgtatc gagggtttt gtgtgaaagc agagcatc 7980
gatactggg acagattcta cattaaggga ggtcaaaaal acaagttccc taaaaatgcc 8040
tatgttgaag gtgtgcctc aagcgcgaagc tattttttgg ctgggtgtc aattactgg 8100
gggactgtga ctgtgaaagg ttgtggcacc accgtttgc agggtatgt gaagtttgc 8160
gaggtaactgg agatgtatgg aqcgaaagggtt acatggaccg agactagcgt aactgttact 8220
ggcccaccgc gggagccatt tggggggaaa caccctcaagg cgattgtatgt caacatgaac 8280
aagatgcctg atgtgcctat gactttgtc gtgggttccc ttttgcggta tggcccgaca 8340
gccccatcagag acgtggcttc ctggagagta aaggagaccg agaggatgtt tgogatccgg 8400
acggagctaa ccaagctgg agcatctgtt gaggaaaggc cggactactg catcatcaeg 8460
ccggccggaga agctgaacgt gacggcgatc gacacgtacg acgaccacag gatggcgatg 8520
gctttctccc tgcggccgtg tgcggagggtt cccgttccatc tccgggaccc tgggtgcacc 8580
cggaagaccc tccccgacta ctgcgtatgt ctgagactt tggtaagaa ttaagctcta 8640
gaacttagtgg atccccccgtt ccggctttgtt gttttctggg tttctcaactt aagggctctgc 8700
gttttacttt tgcgtatggg ttcgggttta gtagtttgcg gtggcttct tggtaatgtgt 8760
aattacqctt tttcttcttg ctgcgtatgtt gtcgggttgcg atataaatcg aatcaagttt 8820
cactttatca gctgtgtttt aaattttggc attaaatlg tgaaaattgc ttcaattttt 8880
tatctaaata gaagagacaa catgaaattt gacttttgc ctcaaatctt cgaacattta 8940
tttcctgtatt tcacgtatgtt tgaggataac gaaaggccgg ttcctatgtc cgggaaagtt 9000
cccgtagaaag acaatgacaa aagctactgtt aacgcggaca cgcgtcgca ttggtaacgg 9060
tatgagttaa accgactcaa ttccctttt aagacataaa ccgattttgg taaaatgtt 9120
acagtgtatgtt gatataaaac gaaaacaaac cggatcataatgtt tgattgttgc aacttgcgt 9180
caaacttcag aattttgggtt attgaatgaa aatcatgttca taatcgatc aatgtacag 9240
aagaaaaagct agagcagaac aaagattctt tattctgtt gcaatttttccatcgtttaa 9300
cgcccttcgtat atttgcgtatgtt gtcggcggaa tttaacgcggcc gggcactgtgg gatcctctgt 9360
cagatctggc cggccaccgc gttggccata tggggccggc gccggaaattt cggatcgtt 9420
acctacctgg cggaaaggggg atgtgtgtca aggcgtatgtt gttgggttac gccagggttt 9480
tcccagtac gacgttgcgaa aacgcggcc agtgcgtatgtt ggcggcaattt cccgatctgt 9540
taacalagat gacaccgcgc gcgataattt atcctactt gtcgtatgtt tttgttttgc 9600
tatcgcgtat taaatgttata attgcgggac tctaatcata aaaaccatc tcataaaataa 9660

cgtcatcgat tacatgttaa ttattacatg cttaacgtaa ttcaacagaa attatatgt 9720
aatcatcgca agaccggcaa caggattcaa tcttaagaaa ctttattgco aatgtttga 9780
acgatcgaaa aaatcgctg agtcacccctc gcccggcct tttgacgctt aatcgccg 9840
caatacacca cgacgcacct ggtcacgkte gatggactcg aacagcycct tgaagttcca 9900
ctgcggcaaac ccatcgctc ccttgcgtc gatgaattcg aagaacacccg gcccattcag 9960
ggtttcccgag aagatctgca gcagcaggcg tttgtcgct tccacggaaq atccgttccag 10020
caggataccg cgtgcctgca gttgatccac cggctcgccg tggtcaggca ggcggcctc 10080
gagcatttcg taataagtgt ctggcggcgc ggtcatgaag cgtatgccga ttttcttcaa 10140
cgcgccccag gtcttgcacca ggtcgctgt gaggaaacgac acgtcgclgga tgccttcgcc 10200
gttqaactgc atcaggaaact ctgcgtatcg ccccgccccc ttggacgact ctgcgttca 10260
cgggatcgccg atcatggccgt cggcgcact catggcccttgaagtcaggc cggtgtactc 10320
gcctcgata tgcagaatgaaac ggcgttcaac gaaatgtqaac aatttctgtt agaagttggc 10380
ccagtagacc atgcggccgc gatagacgtt gtgggtcagg tggtcgtatga ctttggagacc 10440
tgcacccgacc ggatgtcgct ccacacccctc gaggtaacacg aatgtcgatgt cgtatgtca 10500
gtcgcttgc cccggaaacgtt cgatcaggta caacggccgc cccggatgc ctttgcgtc 10560
cggcagggtt aatttccatcg gcccgggtc aatatggatc ggctggggcgc cgagtccag 10620
ggcgggggtt taggcctttt gcgagtcctt caegcggaaac gccatgccgc acaccgacgg 10680
gcccgttgc gcccaaagt aggaggcgat gctgtgggc tgggtgttga ggttcagggtt 10740
gatctcgccc tggcggtaca ggtgcacgtt cttggaaacgg tgggtcgccgaa ctttgggaa 10800
gcccattgtatc tgcagaatgtc gtcagggtt acccggcgtt ggcgcacgcgaa attcgatgaa 10860
ttcaaaagccc atcaggccca ttgggtlttc gtatagatct gccatgcacc ggatccttcc 10920
gcccgttgc acgttgcgca ggcttctggaa ggaggggggg ggcacgggggaa ggctgggggtt 10980
ggacttgagc cccggaaacg ggcgcacggc ggtggccgac gaggccatca tcacgggggg 11040
cgccatagac agccggccgc ggtacgacag cgttgcgttgc ttcttgc cglaggccgg 11100
ccacacccctgc atatattgaa ctcttccacc gttgttggaa aggggtggaga agtcgttagc 11160
cttcttgggt gttggggaaagg cggcgllgga cttaaaggccg gtgaacggag ccaccatgtt 11220
ggcctgagca ggggggggtt ggctaaacggt cgcgactgag gaggagatcg aagccatggc 11280
tatcggttgc aaatgggtaa aatttccaga aaatttgcctt tgctttaaa gaaatgattt 11340
aaatcgctgc aatagaagta gaatgttgc ttgttgcgaa ttgcgttgc ttgtalatgt 11400
tgtgttgcgaa attctagatc cgagagaaat tgatgtctgt aagaagaagaa gaacgggtt 11460
gagtagattt gggtgagaaa gatgtgaaat tgttttata gcacaagacg gagagtctat 11520
tttttggca atcagatcgc atattaaatc taacggctga gatatcgatc cgtgtgtaca 11580
ataaaaatgtat gtataaaccg tcgatctgtt ttaatcgacg gttcatattt gtgatccg 11640
tgatggcagt gatagccact aagaatcg ttttgcattt catgtggccg cacaatttag 11700
gtaatgtaa cggcaatatt ttggaaactcg gaaaataaaaa ttgcycatc acattattt 11760
aaaattttca catgtttta tttaaaaaac ccacgaatta caagttacaa ccgaaaaaga 11820
tttataatat agtattttat actaattttgc tagtagctt atgttatattt atactggaaa 11880
aacaatgtaca atcataatcg atccgtgtgtt acaataaaaat gatgtataaa cgtcgatct 11940
gttttaatcg acgttccata ttgtgtatcc gctgtatggc agtgtatgc actaagaatc 12000
qtctttgtt ttacatgtgg cggccacaat tagggtaatg aagccggcaat attttggaaac 12060
tcggaaaata aaatttgcgc atcacaattt ttgaaaattt tcacatgtt ttatattt 12120
aaccggcggaa ttacaagttt caaccggaaaa agatttataa tatagtgttataattt 12180
ttgttagtagc ttatgttata ttgttactgg aaaaacaatg acaatcataat gtttagtatt 12240
tcaagttatc gtattgtat tgatattggc acataacaatg gytattgcct tctttgcacc 12300
ataaaatatca ccaaatttac aaagtttgc tataccaaatg tatcaattt gatgttgc 12360
tcaacatllt aatttccctt tgagaaacta tagaccacaa gaacacactt caatagataa 12420
agtaactatt tacataagag gttttaaaat cacattaaca aaaataat ccaacccggca 12480
ctcacaataa caaacagacg acacgcacatg tcaaaaggccac aagttaaatc gttgagtt 12540
ggtttcattt caatttgc acgttgc acacgcacatg tcaaaaggccac aagttaaatc gttgagtt 12600
catcaaaatgtt catgttgc acgttgc acacgcacatg tcaaaaggccac aagttaaatc gttgagtt 12660
tcttcgaccc tgcaggcatgc aagctctaga cggccggccca cccgggtggaa ggtactcg 12720
tgcgcacgtt cgttgcacca atttttttta aagcttgc tgcctgcagg tgcaggagaa 12780
atatgttgc acgttgc acacgcacatg tcaaaaggccac aagttaaatc gttgagtt 12840
agatgttgc acgttgc acacgcacatg tcaaaaggccac aagttaaatc gttgagtt 12900
actcaacggaa ttacttgc gtttttgc acgttgc acacgcacatg tcaaaaggccac aagttaaatc gttgagtt 12960
cggttgcgaa ttatllttgtt taatgttgc ttttttttgc acgttgc acacgcacatg tcaaaaggccac aagttaaatc gttgagtt 13020
tcttattgttgc acgttgc acacgcacatg tcaaaaggccac aagttaaatc gttgagtt 13080

cccatttaca attgataaact tggatacac aactttgt aatttggta tatttatggt 13140
 cggaaagg caataccat tggatgtcc aatataata tcaatacgat aacttgataa 13200
 tactaacata tgatgtcat tggtttcca gatcaatat acaataagct actacaaaat 13260
 tagtataaat cactatatta taaatcttt tcgggtgtaa ctlgtaattc gtgggtttt 13320
 aaaataaaag catgtaaaaa ttttcaaata atgtgatggc gcaattttat ttccqagtt 13380
 ccaaaatattt gccgcttcat taccctaatt tggggcga catgtaaaaac aaaagacgat 13440
 tcttagtggc tatcaactgcc atcacgcga tcaactaatat gaaccgtcga taaaacaga 13500
 tcgacggttt atacatcatt ttattgtaca cacggatcga tatctcagcc gttagattt 13560
 atatgcgatc tgattgtctca aaaaatagac ttcgatgttt tgcctataaaa aacaatttca 13620
 catcttctc acccaaatct acctcaacc gtttttttc ttctacagac atcaatttct 13680
 ctcgactcta gaggatccaa gcttacgtat ttcgaaacccc tcaggcgaag aacaggatg 13740
 atttttgtt aatttagatca ggggtttagg totttccatt acttttaat gtttttctg 13800
 ttactgtctc cgccatctgaa tttaacgaca atagagttt gggtttgc ccattccagt 13860
 ttgaaaataa aggtccgtct tttaagttt ctggatcgat aaacctgtga agattgagtc 13920
 tagtcgattt attgatgtat ccattttca tgggtttttt ctgttgcgat agttctgtat 13980
 aaccagattt gtctgtgtc gattgtcatt acctagccgt qtatcgagaa ctagggttt 14040
 cgagtcatt ttggccctt tggtatata tggtgcata acgattcata tggatttaggg 14100
 ttttaagtgg tgacgttag tattccaatt tttcaaaaat ttagttatgg ataalaaaaa 14160
 tcccaattt actgttcaat ttctgtttaa atgcgcagat ccccatggct tcgatctct 14220
 cctcaagtcgc gaccgttagc cggacccccc ctgctcagggc caacatggc gctccgttca 14280
 cggcccttaa gtccaaacccc gcctttccca ccaaccaagaa qqctaacgac ttccacccc 14340
 ttcccaagca cgggtggaaa gttcaatqta tgcagggtgt gcccggctac ggcaacaaga 14400
 agttcgagac gctqtcgtac ctgcccggc tgcgtatggc gcccacccgt atgatggct 14460
 cgteggccac cgccgtcgtc cgggtccagg ggctcaaggc caccggcggc ctccccgtcg 14520
 cccggccgtc ctccagaagc ctggcaacgg tccggcaacgg cggaaaggatc cgggtcatgg 14580
 cggccggca gtagatcgat ctgcagccca tcaaggagat ctccggcacc gtaagatgc 14640
 cgggggtccaa gtcgtttcc aaccggatcc tcctactcgc cggccgttcc gaggggacaa 14700
 cagttgtgtaa taacctgtc aacagtgggg atgtccacta catgctcggg gcttgagga 14760
 ctctgttct ctctgtcggaa ggggacaaaat ctggccaaaat agctgtatgtt gttggctgt 14820
 gtggaaagtt cccagtttag gatgotaatgg aggaagtgc gcttttttggaaatgtct 14880
 gaatcgcaat ggggtcctt acagcagctg ttactgtgc tgggtggaaat gcaacttacg 14940
 tgctgtatgg agtaccaaga atqaggggaga gaccatgg cggacttggt gtcggattga 15000
 agcagttgg tgcagatgtt gatttttcc ttggcactga ctggccaccc gttcgtgtca 15060
 atggaaatggg agggtctactt ggtggcaagg tcaagctgtc tggctccatc agcagtcagt 15120
 acttggatgtc cttgtgtat gctgttccctt tggcttgcggatggatgttggag attggaaatca 15180
 ttgataatattt aatctccatt ccgtacgtcg aatgtacattt qagattgtat gaggcgatgg 15240
 gtgtgaaatggc agagcattt gatagtgggg acagattcta cattaaggga ggtcaaaaat 15300
 acaagttcccc taaaatggc tatgtgtaaat gtgtatgcctt aagcgcacgc tattttttgg 15360
 ctgggtgtgc aattatggc gggactgtga ctgtggaaagg ttgtggcacc accagtttgc 15420
 aggggtgtatgtt gaaatggggat gaggacttgg agatgtggg agcgaagggtt acatggaccg 15480
 agatgtatgtt aactgttactt gggccaccgg ggggacccattt tggggggaaa caccctcaagg 15540
 cgattgtatgtt caacatgaaac aagatgttgc tggatgttgcctt aagcgcacgc tattttttgg 15600
 tctttggccgat tggccggaca gccatcagag aegtggttcc ctggagagta aaggagaccg 15660
 agaggatgggt tggatgttgc aegggatcgg acaagctggg agcatctgtt gaggaaaggc 15720
 cggactactcg catcatcaac ccgcggggaga agctqaacgt qacggccgtc gacacgtacg 15780
 acgaccacag gatggcgatq gcttttctcc ttggccgttgc tggccggatcc cccgtccatca 15840
 tccgggaccc tgggtgcacc cggaaagaccc tcccccgcata ctggatgtgc tggatgttgc 15900
 tggatgtatgtt aatgtatgtt gaaatgttgg atttttttttt gggatgttgc gttttttttttt 15960
 ttttcacat aagcgtctgc gttttactt tttttttttt tggatgttgc gttttttttttt 16020
 gtagcgttct tggatgttgc aattacgttt tttttttttt ctggatgttgc gttttttttttt 16080
 atataaatcg aatcaagttt cacttatca gggatgttgg aatttttttt gttttttttttt 16140
 tggaaatgtc ttcaattttt tatctaaata gaagagacaaat catgaaatcc gacttttgc 16200
 ctcaaaatctt cgaacattta ttccgttattc tccacgttgg tggatgttgc gttttttttttt 16260
 ttccatgttc cggggaaatgg cccgttgcggatcc acaatgttgg aagctactga aacggggaca 16320
 cgacgtcgca tggatgttgc tggatgttgc aatgttgg gttttttttttt aagacataaaa 16380
 cggatgttgg ttaaaatgttca aacgtgtatgtt gatataaaaac cggatgttgc gttttttttttt 16440
 ttgattgtatgtt aacttgcgtt aacacttgc aatgttggatgttgc gttttttttttt 16500

taatcgtaaa	aatgtacag	aagaaaagct	agagcagaac	aaagattcta	tattctgggt	16560
ccaatttatac	atcgctttaa	cgtccctcag	atttgcattcg	gctgcaggaa	ttaatgtgggt	16620
tcatccgtct	ttttgttaat	gcggcattca	atacgtgcct	caaagattgc	caaataagatt	16680
aatgtgggtc	atctccctat	atgtttgc	tgttggat	tgcattatcaca	tgtttattgc	16740
tccaaactaa	ttataataaa	atgacttca	aatgattgggt	gttgacattc	tttcaaaatt	16800
gttcgctgaa	gaaaagataa	tctcgaggcc	ttgatttglt	aatgcattca	ttaataaataa	16860
aaalaaaataa	ctctttccaa	atttcaattc	atgcattttat	attgtgtgggt	tcatttcattcat	16920
cattatgtcac	tattatcatt	tcatgttga	gacttactt	ggccatattt	gagaagacct	16980
tcttcattat	aggcaatttt	atctccacaa	taatataaga	gaatatcttg	aattaataat	17040
tattgaggat	atattatagg	gttctatgtg	gaactaaaga	catggttacc	ccattaaagag	17100
agagatataga	ggaattactt	ttatttgcca	cgaggcgacg	cgacttgtat	ttattttggaa	17160
attgtacttt	tgcgtgagca	gtgtgcgtcl	atgttggggc	ctccacttgc	tggtgtttta	17220
tataatgtgaa	aggaggatga	gggtgatggt	tcatttctt	gcattatttt	tgttattcgc	17280
gcgaatgata	tatgcctgt	ttttgaagat	tgtataggaa	gtccatatat	aggaattgaa	17340
gtgtcaaaag	qgtgtgagta	tgtgtatga	taatcaccca	attaatgtac	atctgggtgt	17400
gtgtttgaat	ttttaggtca	ttaattaata	ttcctcttgg	tgaagtttgg	agtcttttg	17460
caattacaat	tctgtttgt	aagtgtttat	gatggacall	lagatgttgc	tcaaacagta	17520
ggtgtaaaga	aaaatggccc	ctggatgaa	aatttggttt	cactcttct	cattcatatc	17580
tttaaaaaaaa	gaatgataat	tttgttaataa	aaataaaaaaa	atattaaata	ttttctcaaa	17640
tcaaacaacc	tttattttt	atgccaacaa	taattttgtt	aaagatggag	atttcaatta	17700
ttatataaga	gttcattata	gttggaaatt	gaatgaatgt	atatgttac	gtttttgtc	17760
tcaagtggaaa	ctaagatcaa	atattcatat	ctattgagct	ggtctt		17806

<210> 21
 <211> 23
 <212> DNA
 <213> Artificial sequence

<220>
 <223> primer SHA130

<400> 21
 ctatattctg gttccaattt atc

23

<210> 22
 <211> 20
 <212> DNA
 <213> Artificial sequence

<220>
 <223> primer SMP178

<400> 22
 tgaggcacgt attgatgacc

20

CLAIMS:

1. A soybean plant cell comprising in its genome elite event EE-GM3 and elite event EE-GM2, wherein elite event EE-GM3 comprises a nucleotide sequence which is at least 90 % identical to the full sequence set forth in SEQ ID No 20, and elite event EE-GM3 comprises a chimeric gene encoding a functional HPPD Pf W366 protein and a chimeric gene encoding a functional 2mEPSPS protein, wherein elite event EE-GM2 comprises a nucleotide sequence which is at least 90 % identical to the sequence formed by the following sequences in order: a) the nucleotide sequence of SEQ ID No 14 from nucleotide 1 to 311, b) the nucleotide sequence of SEQ ID No 11 from nucleotide 3458 to nucleotide 3848, c) the nucleotide sequence of SEQ ID No 11 from nucleotide 413 to nucleotide 3457, and d) the nucleotide sequence of SEQ ID No 15 from nucleotide 508 to nucleotide 1880, and elite event EE-GM2 comprises a chimeric phosphinothricin acetyltransferase encoding gene, and wherein said plant cell is tolerant to an HPPD inhibitor herbicide, a glufosinate-based herbicide and a glyphosate-based herbicide.
- 15 2. The plant cell of claim 1, wherein elite event EE-GM3 comprises a nucleotide sequence which is at least 95 % identical to the full sequence set forth in SEQ ID No 20, and wherein elite event EE-GM2 comprises a nucleotide sequence which is at least 95 % identical to the sequence formed by the following sequences in order: a) the nucleotide sequence of SEQ ID No 14 from nucleotide 1 to 311, b) the nucleotide sequence of SEQ ID No 11 from nucleotide 3458 to nucleotide 3848, c) the nucleotide sequence of SEQ ID No 11 from nucleotide 413 to nucleotide 3457, and d) the nucleotide sequence of SEQ ID No 15 from nucleotide 508 to nucleotide 1880.
- 20 3. The plant cell of claim 1, wherein elite event EE-GM3 comprises a nucleotide sequence which is at least 99.5 % identical to the full sequence set forth in SEQ ID No 20, and wherein elite event EE-GM2 comprises a nucleotide sequence which is at least 99.5 % identical to the sequence formed by the following sequences in order: a) the nucleotide sequence of SEQ ID No 14 from nucleotide 1 to 311, b) the nucleotide sequence of SEQ ID No 11 from nucleotide 3458 to nucleotide 3848, c) the nucleotide sequence of SEQ ID No 11 from nucleotide 413 to nucleotide 3457, and d) the nucleotide sequence of SEQ ID No 15 from nucleotide 508 to nucleotide 1880.

4. The plant cell according to any one of claims 1 to 3, wherein elite event EE-GM3 comprises a 5' junction sequence which is the sequence of SEQ ID No 2 from nucleotide position 1431 to nucleotide position 1472, and comprises a 3' junction sequence which is the sequence of SEQ ID No 3 from nucleotide position 220 to nucleotide position 261, or the complement thereof, and wherein elite event EE-GM2 comprises a 5' junction sequence which is the sequence of SEQ ID No 14 from nucleotide position 301 to nucleotide position 322, and comprises a 3' junction sequence which is the sequence of SEQ ID No 15 from nucleotide position 497 to nucleotide position 518 or the complement thereof.
5
5. The plant cell according to any one of claims 1 to 4, wherein elite event EE-GM3 comprises: a) 5' flanking sequence which is at least 90 % identical to the sequence from nucleotide position 1 to nucleotide position 1451 of SEQ ID No 20, b) a sequence comprising a chimeric gene encoding a functional HPPD Pf W366 protein and a chimeric gene encoding a functional 2mEPSPS protein which sequence is at least 99 % identical to the sequence from nucleotide position 1452 to nucleotide position 16638 of SEQ ID No 20, and elite event EE-GM2 comprises: a) 5' flanking sequence which is at least 90 % identical to the sequence from nucleotide position 1 to nucleotide position 311 of SEQ ID No 14, b) a sequence comprising a chimeric gene encoding a functional phosphinothricin acetyltransferase which sequence is at least 99 % identical to the sequence formed by the following sequences in order: the nucleotide sequence of SEQ ID No 11 from nucleotide 3458 to nucleotide 3848, and the nucleotide sequence of SEQ ID No 11 from nucleotide 413 to nucleotide 3457, and c) a 3' flanking sequence which is at least 90 % identical to the sequence from nucleotide position 508 to nucleotide position 1880 of SEQ ID No 15.
10
- 15
- 20
- 25
6. The plant cell according to any one of claims 1 to 5, wherein elite event EE-GM3 comprises the sequence of SEQ ID No 2 and the sequence of SEQ ID No 3, and elite event EE-GM2 comprises the sequence of SEQ ID No 14 and SEQ ID No 15.
7. The cell of any one of claims 1 to 6, the genomic DNA of which, when analyzed using PCR for EE-GM3 with two primers comprising the nucleotide sequence of SEQ ID No 4 and SEQ ID No 5 respectively, yields a DNA fragment of about 263 bp and the genomic DNA of which, when analyzed using PCR for EE-GM2 with two primers comprising the
30

nucleotide sequence of SEQ ID No 18 and SEQ ID No 19 respectively, yields a DNA fragment of about 151 bp.

8. The cell of any one of claims 1 to 7 that is tolerant to isoxaflutole, glufosinate and glyphosate.
- 5 9. A nucleic acid molecule comprising the elite event EE-GM3 as defined in any one of claims 1 to 6 and a nucleic acid molecule comprising the elite event EE-GM2 as defined in any one of claims 1 to 6.
10. A pair of nucleic acid molecules, the first nucleic acid molecule comprising the nucleotide sequence of SEQ ID No 2 from nucleotide 1431 to nucleotide 1462, or the complement thereof, and the second nucleic acid molecule comprising the nucleotide sequence of SEQ ID No 14 from nucleotide 301 to nucleotide 322, or the complement thereof.
11. The nucleic acid molecules of claim 10, comprising a nucleic acid molecule comprising the nucleotide sequence of SEQ ID No 2, or the complement thereof, and a nucleic acid molecule comprising the nucleotide sequence of SEQ ID No 14, or the complement thereof.
- 15 12. A soybean plant cell or seed cell comprising the nucleic acid molecules of any one of claims 9 to 11.
13. Use of a soybean plant or seed comprising elite event EE-GM3 and elite event EE-GM2, wherein the elite events EE-GM3 and EE-GM2 are as defined in any one of claims 1 to 6 to produce progeny tolerant to an HPPD inhibitor, glufosinate and glyphosate.
- 20 14. A method for producing a soybean product, comprising obtaining soybean seed comprising elite events EE-GM3 and EE-GM2, wherein the elite events EE-GM3 and EE-GM2 are as defined in any one of claims 1 to 6, and producing the soybean product therefrom.
15. A method for protecting emerging soybean plants from competition by weeds, comprising treating a field in which seeds containing elite events EE-GM3 and EE-GM2 were sown, 25 with an HPPD inhibitor herbicide, wherein the elite events EE-GM3 and EE-GM2 are as defined in any one of claims 1 to 6, and wherein the plants are tolerant to the HPPD inhibitor herbicide.
16. The method according to claim 15, wherein the HPPD inhibitor herbicide is isoxaflutole.

17. The method according to claim 15 or 16, further comprising application of glyphosate or glufosinate or an HPPD inhibitor-glyphosate mixture or an HPPD inhibitor-glufosinate mixture as a post-emergent herbicide over the top of the plants.
18. A method for protecting emerging soybean plants from competition by weeds, comprising treating a field to be planted with soybean plants comprising elite events EE-GM3 and EE-GM2 with an HPPD inhibitor herbicide, before the soybean plants are planted or the seeds are sown, followed by planting or sowing of said soybean plants or seeds in said pre-treated field, wherein the elite events EE-GM3 and EE-GM2 are as defined in any one of claims 1 to 6, and wherein the plants are tolerant to the HPPD inhibitor herbicide.
- 10 19. The method according to claim 18, further comprising the step of applying glyphosate, glufosinate or an HPPD inhibitor-glyphosate mixture, or an HPPD inhibitor-glufosinate mixture as a post-emergent herbicide over the top of the plants.
20. A method for controlling weeds in a field of soybean plants comprising elite events EE-GM3 and EE-GM2, wherein the elite events EE-GM3 and EE-GM2 are as defined in any one of claims 1 to 6, comprising treating said field with an effective amount of an HPPD inhibitor herbicide, wherein the plants are tolerant to the herbicide.
- 15 21. The method of claim 20, wherein the treatment with an HPPD inhibitor herbicide is applied together with, followed by or preceded by, a treatment with glyphosate or glufosinate as a post-emergent herbicide, wherein said soybean plants are also tolerant to glyphosate and glufosinate.
- 20 22. A method for controlling weeds in a field of soybean plants or seeds comprising elite events EE-GM3 and EE-GM2, wherein the elite events EE-GM3 and EE-GM2 are as defined in any one of claims 1 to 6, comprising treating said field with an effective amount of glyphosate or glufosinate or an HPPD inhibitor herbicide, or glyphosate and glufosinate, or glyphosate and an HPPD inhibitor herbicide, or glufosinate and an HPPD inhibitor herbicide, or glyphosate and glufosinate and an HPPD inhibitor herbicide, wherein the plants or seeds are tolerant to the HPPD inhibitor herbicide, to glufosinate and to glyphosate.
- 25 23. A method for controlling weeds in a field of soybean plants or seeds comprising elite events EE-GM3 and EE-GM2, wherein the elite events EE-GM3 and EE-GM2 are as defined in

any one of claims 1 to 6, comprising treating said field with an effective amount of glyphosate or glufosinate or an HPPD inhibitor herbicide, or glyphosate and glufosinate, or glyphosate and an HPPD inhibitor herbicide, or glufosinate and an HPPD inhibitor herbicide, or glyphosate and glufosinate and an HPPD inhibitor herbicide, wherein the 5 plants or seeds are tolerant to the HPPD inhibitor herbicide, to glufosinate and to glyphosate, and wherein elite event EE-GM3 comprises the DNA sequence of SEQ ID No 20.

24. A method for protecting emerging soybean plants from competition by weeds, comprising 10 treating a field to be planted with soybean plants comprising elite events EE-GM3 and EE-GM2 with glyphosate or glufosinate or an HPPD inhibitor herbicide, or glyphosate and glufosinate, or glyphosate and an HPPD inhibitor herbicide, or glufosinate and an HPPD inhibitor herbicide, or glyphosate and glufosinate and an HPPD inhibitor herbicide, before the soybean plants are planted or the seeds are sown, followed by planting or sowing of said 15 soybean plants or seeds in said pre-treated field, wherein the elite events EE-GM3 and EE-GM2 are as defined in any one of claims 1 to 6, and wherein said plants or seeds are tolerant to said HPPD inhibitor herbicide, to glufosinate and to glyphosate.

25. A method for protecting emerging soybean plants from competition by weeds, comprising 20 treating a field to be planted with soybean plants comprising elite events EE-GM3 and EE-GM2 with glyphosate or glufosinate, before the soybean plants are planted or the seeds are sown, followed by planting or sowing of said soybean plants or seeds in said pre-treated field, wherein the elite events EE-GM3 and EE-GM2 are as defined in any one of claims 1 to 6, and wherein said plants or seeds are tolerant to glyphosate and glufosinate.

26. A method for protecting emerging soybean plants from competition by weeds, comprising 25 treating a field to be planted with soybean plants comprising elite events EE-GM3 and EE-GM2 with glyphosate or glufosinate, before the soybean plants are planted or the seeds are sown, followed by planting or sowing of said soybean plants or seeds in said pre-treated field, wherein the elite events EE-GM3 and EE-GM2 are as defined in any one of claims 1 to 6, and wherein said plants or seeds are tolerant to glyphosate and glufosinate, wherein elite event EE-GM3 comprises the DNA sequence of SEQ ID No 20.

30 27. A method for identifying the simultaneous presence of elite events EE-GM3 and EE-GM2 as defined in any one of claims 1 to 6 in a biological sample, which method comprises

detection of an EE-GM3 specific region with two specific primers, one of which specifically recognizes a sequence within the 5' or 3' flanking region of foreign DNA comprising herbicide tolerance genes in EE-GM3, and the other primer specifically recognizing a sequence within the foreign DNA contiguous with said 5' or 3' flanking region of EE-GM3,

5 and detection of an EE-GM2 specific region with two specific primers, one of which specifically recognizing the 5' or 3' flanking region of foreign DNA comprising herbicide tolerance genes in EE-GM2, and the other primer specifically recognizing a sequence within the foreign DNA contiguous with said 5' or 3' flanking region of EE-GM2, or said method comprising detection of an EE-GM3 specific region with a specific probe, which

10 specifically recognizes part of the 5' or 3' flanking region of EE-GM3, and part of the foreign DNA contiguous therewith, and detection of an EE-GM2 specific region with another specific probe which specifically recognizes part of the 5' or 3' flanking region of EE-GM2, and part of the foreign DNA contiguous therewith, wherein said 5' flanking region of EE-GM3 comprises the nucleotide sequence of SEQ ID No 2 from nucleotide 1 to

15 nucleotide 1451, said 3' flanking region of EE-GM3 comprises the nucleotide sequence of the complement of SEQ ID No 3 from nucleotide 241 to nucleotide 1408, said foreign DNA contiguous with said 5' or 3' flanking region of EE-GM3 comprises the nucleotide sequence of the complement of SEQ ID No 2 from nucleotide 1452 to nucleotide 1843 or the nucleotide sequence of SEQ ID No 3 from nucleotide 1 to nucleotide 240 or the nucleotide

20 sequence of SEQ ID No 1 or its complement, or the nucleotide sequence of SEQ ID No 20 from nucleotide position 1452 to nucleotide position 16638 or its complement, and said 5' flanking region of EE-GM2 comprises the nucleotide sequence of SEQ ID No 14 from nucleotide 1 to nucleotide 311, said 3' flanking region of EE-GM2 comprises the nucleotide sequence of the complement of SEQ ID No 15 from nucleotide 508 to nucleotide 1880, and

25 said foreign DNA contiguous with said 5' or 3' flanking region of EE-GM2 comprises the nucleotide sequence of the complement of SEQ ID No 14 from nucleotide 312 to nucleotide 810 or the nucleotide sequence of SEQ ID No 15 from nucleotide 1 to nucleotide 507 or the nucleotide sequence of SEQ ID No 11 or its complement.

28. The method of claim 27, said method comprising amplifying two DNA fragments of

30 between 50 and 1000 bp from a nucleic acid present in said biological sample using a first polymerase chain reaction with at least said two primers specific for the 5' or 3' flanking region of EE-GM3 and the foreign DNA contiguous therewith, and using a second

polymerase chain reaction with at least said two primers specific for the 5' or 3' flanking region of EE-GM2 and the foreign DNA contiguous therewith, whereby said first and second polymerase reaction may be sequential or simultaneous.

29. The method of claim 27, wherein said primer recognizing the 5' flanking region of EE-GM3
5 comprises a nucleotide sequence of 17 to 200 consecutive nucleotides selected from the nucleotide sequence of SEQ ID No 2 from nucleotide 1 to nucleotide 1451 or said primer recognizing the 3' flanking region of EE-GM3 comprises a nucleotide sequence of 17 to 200 consecutive nucleotides selected from the nucleotide sequence of the complement of SEQ ID No 3 from nucleotide 241 to nucleotide 1408, and said primer
10 recognizing a sequence within the foreign DNA of EE-GM3 comprises 17 to 200 consecutive nucleotides selected from the nucleotide sequence of the complement of SEQ ID No 2 from nucleotide 1452 to nucleotide 1843 or the nucleotide sequence of SEQ ID No 3 from nucleotide 1 to nucleotide 240 or the nucleotide sequence of SEQ ID No 1 or its complement, or the nucleotide sequence of SEQ ID No 20 from nucleotide position 1452 to nucleotide position 16638 or its complement, and wherein said
15 primer recognizing the 5' flanking region of EE-GM2 comprises a nucleotide sequence of 17 to 200 consecutive nucleotides selected from the nucleotide sequence of SEQ ID No 14 from nucleotide 1 to nucleotide 311 or said primer recognizing the 3' flanking region of EE-GM2 comprises a nucleotide sequence of 17 to 200 consecutive
20 nucleotides selected from the nucleotide sequence of the complement of SEQ ID No 15 from nucleotide 508 to nucleotide 1880, and said primer recognizing a sequence within the foreign DNA of EE-GM2 comprises 17 to 200 consecutive nucleotides selected from the nucleotide sequence of the complement of SEQ ID No 14 from nucleotide 312 to nucleotide 810 or the nucleotide sequence of SEQ ID No 15 from nucleotide 1 to nucleotide 507 or the nucleotide sequence of SEQ ID No 11 or its complement.
25

30. The method of claim 27, wherein said primer recognizing the 5' flanking region of EE-GM3 comprises at its extreme 3' end a nucleotide sequence of at least 17 consecutive nucleotides selected from the nucleotide sequence of SEQ ID No 2 from nucleotide 1 to nucleotide 1451 or said primer recognizing the 3' flanking region of EE-GM3 comprises at its extreme 3'
30 end a nucleotide sequence of at least 17 consecutive nucleotides selected from the nucleotide sequence of the complement of SEQ ID No 3 from nucleotide 241 to nucleotide 1408, and said primer recognizing a sequence within the foreign DNA of

EE-GM3 comprises at its 3' end at least 17 consecutive nucleotides selected from the nucleotide sequence of the complement of SEQ ID No 2 from nucleotide 1452 to nucleotide 1843 or the nucleotide sequence of SEQ ID No 3 from nucleotide 1 to nucleotide 240 or the nucleotide sequence of SEQ ID No 1 or its complement, and wherein

5 said primer recognizing the 5' flanking region of EE-GM2 comprises at its extreme 3' end a nucleotide sequence of at least 17 consecutive nucleotides selected from the nucleotide sequence of SEQ ID No 14 from nucleotide 1 to nucleotide 311 or said primer recognizing the 3' flanking region of EE-GM2 comprises at its extreme 3' end a nucleotide sequence of at least 17 consecutive nucleotides selected from the nucleotide sequence of the complement

10 of SEQ ID No 15 from nucleotide 508 to nucleotide 1880, and said primer recognizing a sequence within the foreign DNA of EE-GM2 comprises at its 3' end at least 17 consecutive nucleotides selected from the nucleotide sequence of the complement of SEQ ID No 14 from nucleotide 312 to nucleotide 810 or the nucleotide sequence of SEQ ID No 15 from nucleotide 1 to nucleotide 507 or the nucleotide sequence of SEQ ID No 11 or its

15 complement.

31. The method of claim 30, wherein said EE-GM3 specific primers comprise the sequence of SEQ ID No 5 and SEQ ID No 4 respectively, or the sequence of SEQ ID No 7 and SEQ ID No 5 respectively, and said EE-GM2 specific primers comprise the sequence of SEQ ID No 18 and SEQ ID No 19 respectively.

20 32. The method of claim 31, which method comprises amplifying by PCR a EE-GM3 specific fragment of about 263 or 706 bp and a EE-GM2 specific fragment of about 151 bp.

33. Two pairs of primers suitable for specifically detecting elite events EE-GM3 and EE-GM2 as defined in any one of claims 1 to 6, said first primer pair comprising a first primer comprising a sequence which recognizes a sequence within the 5' or 3' flanking region of foreign DNA comprising herbicide tolerance genes in EE-GM3, and a second primer comprising a sequence which recognizes a sequence within the foreign DNA sequences contiguous with said 5' or 3' flanking region in EE-GM3, and said second primer pair comprising a third primer comprising a sequence which recognizes a sequence within the 5' or 3' flanking region of foreign DNA comprising a herbicide tolerance gene in EE-GM2,

25 and a fourth primer comprising a sequence which recognizes a sequence within the foreign DNA sequences contiguous with said 5' or 3' flanking region in EE-GM2, wherein said 5'

30

flanking region of EE-GM3 comprises the nucleotide sequence of SEQ ID No 2 from nucleotide 1 to nucleotide 1451, said 3' flanking region of EE-GM3 comprises the nucleotide sequence of the complement of SEQ ID No 3 from nucleotide 241 to nucleotide 1408, said foreign DNA contiguous with said 5' or 3' flanking region of EE-GM3 comprises the nucleotide sequence of the complement of SEQ ID No 2 from nucleotide 1452 to nucleotide 1843 or the nucleotide sequence of SEQ ID No 3 from nucleotide 1 to nucleotide 240 or the nucleotide sequence of SEQ ID No 1 or its complement, or the nucleotide sequence of SEQ ID No 20 from nucleotide position 1452 to nucleotide position 16638 or its complement, and said 5' flanking region of EE-GM2

5 comprises the nucleotide sequence of SEQ ID No 14 from nucleotide 1 to nucleotide 311, said 3' flanking region of EE-GM2 comprises the nucleotide sequence of the complement of SEQ ID No 15 from nucleotide 508 to nucleotide 1880, and said foreign DNA contiguous with said 5' or 3' flanking region of EE-GM2 comprises the nucleotide sequence of the complement of SEQ ID No 14 from nucleotide 312 to nucleotide 810 or the nucleotide sequence of SEQ ID No 15 from nucleotide 1 to nucleotide 507 or the nucleotide sequence of SEQ ID No 11 or its complement.

10

15

34. The pairs of primers of claim 33, wherein said first primer comprises a nucleotide sequence of 17 to 200 consecutive nucleotides selected from the nucleotide sequence of SEQ ID No 2 from nucleotide 1 to nucleotide 1451 or a nucleotide sequence of 17 to 200 consecutive nucleotides selected from the nucleotide sequence of the complement of SEQ ID No 3 from nucleotide 241 to nucleotide 1408, said second primer comprises a nucleotide sequence of 17 to 200 consecutive nucleotides selected from the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1452 to nucleotide 1843 or a nucleotide sequence of 17 to 200 consecutive nucleotides selected from the nucleotide sequence of SEQ ID No 3 from nucleotide 1 to nucleotide 240, and wherein said third primer comprises a nucleotide sequence of 17 to 200 consecutive nucleotides selected from the nucleotide sequence of SEQ ID No 14 from nucleotide 1 to nucleotide 311 or a nucleotide sequence of 17 to 200 consecutive nucleotides selected from the nucleotide sequence of the complement of SEQ ID No 15 from nucleotide 508 to nucleotide 1880, and said fourth primer comprises a nucleotide sequence of 17 to 200 consecutive nucleotides selected from the complement of the nucleotide sequence of SEQ ID No 14 from nucleotide 312 to nucleotide 810 or a

20

25

30

nucleotide sequence of 17 to 200 consecutive nucleotides selected from the nucleotide sequence of SEQ ID No 15 from nucleotide 1 to nucleotide 507.

35. The pairs of primers of claim 33, wherein said first primer comprises at its extreme 3' end a nucleotide sequence of at least 17 consecutive nucleotides selected from the nucleotide sequence of SEQ ID No 2 from nucleotide 1 to nucleotide 1451 or a nucleotide sequence of at least 17 consecutive nucleotides selected from the nucleotide sequence of the complement of SEQ ID No 3 from nucleotide 241 to nucleotide 1408, wherein said second primer comprises at its extreme 3' end a nucleotide sequence of at least 17 consecutive nucleotides selected from the complement of the nucleotide sequence of SEQ ID No 2 from nucleotide 1452 to nucleotide 1843 or a nucleotide sequence of at least 17 consecutive nucleotides selected from the nucleotide sequence of SEQ ID No 3 from nucleotide 1 to nucleotide 240, and wherein said third primer comprises at its extreme 3' end a nucleotide sequence of at least 17 consecutive nucleotides selected from the nucleotide sequence of SEQ ID No 14 from nucleotide 1 to nucleotide 311 or a nucleotide sequence of at least 17 consecutive nucleotides selected from the nucleotide sequence of the complement of SEQ ID No 15 from nucleotide 508 to nucleotide 1880, and wherein said fourth primer comprises at its extreme 3' end a nucleotide sequence of at least 17 consecutive nucleotides selected from the complement of the nucleotide sequence of SEQ ID No 14 from nucleotide 312 to nucleotide 810 or the nucleotide sequence of SEQ ID No 15 from nucleotide 1 to nucleotide 507.

10

15

20

25

36. A set comprising four primers,

a first primer comprising at its extreme 3' end the sequence of SEQ ID No 5;

a second primer comprising at its extreme 3' end the sequence of SEQ ID No 4;

a third primer comprising at its extreme 3' end the sequence of SEQ ID No 18; and

a fourth primer comprising at its extreme 3' end the sequence of SEQ ID No 19.

37. The method of claim 27, which method comprises hybridizing a nucleic acid of a biological sample with a first specific probe for EE-GM3 and with a second specific probe for EE-GM2, wherein the sequence of said first specific probe has at least 80 % sequence identity with a sequence comprising part of the 5' or 3' flanking sequence of EE-GM3 and the sequence of the foreign DNA contiguous therewith, and wherein the sequence of said

30

second specific probe has at least 80 % sequence identity with a sequence comprising part of the 5' or 3' flanking sequence of EE-GM2 and the sequence of the foreign DNA contiguous therewith.

38. A pair of specific probes for the identification of the simultaneous presence of elite event
5 EE-GM3 and elite event EE-GM2 as defined in any one of claims 1 to 6 in a biological sample, which comprises a first probe comprising a nucleotide sequence having at least 80 % sequence identity with a sequence comprising part of the 5' or 3' flanking sequence of foreign DNA comprising herbicide tolerance genes in EE-GM3 and the sequence of the foreign DNA contiguous therewith, or the complement thereof, and a second probe comprising a nucleotide sequence having at least 80 % sequence identity with a sequence comprising part of the 5' or 3' flanking sequence of foreign DNA comprising herbicide tolerance genes in EE-GM2 and the sequence of the foreign DNA contiguous therewith, or the complement thereof, wherein said 5' flanking region of EE-GM3 comprises the nucleotide sequence of SEQ ID No 2 from nucleotide 1 to nucleotide 1451, said 3' flanking region of EE-GM3 comprises the nucleotide sequence of the complement of SEQ ID No 3 from nucleotide 241 to nucleotide 1408, said foreign DNA contiguous with said 5' or 3' flanking region of EE-GM3 comprises the nucleotide sequence of the complement of SEQ ID No 2 from nucleotide 1452 to nucleotide 1843 or the nucleotide sequence of SEQ ID No 3 from nucleotide 1 to nucleotide 240 or the nucleotide sequence of SEQ ID No 1 or its complement, or the nucleotide sequence of SEQ ID No 20 from nucleotide position 1452 to nucleotide position 16638 or its complement, and said 5' flanking region of EE-GM2 comprises the nucleotide sequence of SEQ ID No 14 from nucleotide 1 to nucleotide 311, said 3' flanking region of EE-GM2 comprises the nucleotide sequence of the complement of SEQ ID No 15 from nucleotide 508 to nucleotide 1880, and said foreign DNA contiguous with said 5' or 3' flanking region of EE-GM2 comprises the nucleotide sequence of the complement of SEQ ID No 14 from nucleotide 312 to nucleotide 810 or the nucleotide sequence of SEQ ID No 15 from nucleotide 1 to nucleotide 507 or the nucleotide sequence of SEQ ID No 11 or its complement.

20
15
25
30

39. The pair of probes of claim 38, wherein said first probe comprises the sequence of SEQ ID No 2 from nucleotide 1441 to 1462 or SEQ ID No 3 from nucleotide 230 to 251, or the complement of said sequences, and wherein said second probe comprises the sequence

of SEQ ID No 14 from nucleotide 301 to 322 or SEQ ID No 15 from nucleotide 497 to 518, or the complement of said sequences.

40. A kit comprising two primer pairs or two probes specifically recognizing elite events EE-GM3 and EE-GM2 as defined in any one of claims 1 to 6, and instructions for using said 5 primer pairs or probes for specifically detecting said elite events, wherein said primer pairs are the pairs of any one of claims 33 to 36, and wherein said probes are the probes of claim 38 or 39.

41. The method of claim 27 for confirming seed purity, or for screening seeds for the presence of elite event EE-GM3 and EE-GM2 as defined in any one of claims 1 to 6, in seed samples.

10 42. A method of detecting the presence of elite events EE-GM3 and EE-GM2 as defined in any one of claims 1 to 6 in a biological sample through hybridization with a substantially complementary labeled nucleic acid probe in which the probe:target nucleic acid ratio is amplified through recycling of the target nucleic acid sequence, said method comprising:

15 a) hybridizing said target nucleic acid sequence to a first nucleic acid oligonucleotide comprising the nucleotide sequence of SEQ ID No 2 from nucleotide 1452 to nucleotide 1469 or its complement or said first nucleic acid oligonucleotide comprising the nucleotide sequence of SEQ ID No 3 from nucleotide 223 to nucleotide 240 or its complement;

20 b) hybridizing said target nucleic acid sequence to a second nucleic acid oligonucleotide comprising the nucleotide sequence of SEQ ID No 2 from nucleotide 1434 to nucleotide 1451 or its complement or said second nucleic acid oligonucleotide comprising the nucleotide sequence of SEQ ID No 3 from nucleotide 241 to nucleotide 258 or its complement, wherein said first and second oligonucleotide overlap by at least one nucleotide, and wherein either said first or said second oligonucleotide is labeled to be said 25 labeled nucleic acid probe;

c) cleaving only the labeled probe within the probe:target nucleic acid sequence duplex with an enzyme which causes selective probe cleavage resulting in duplex disassociation, leaving the target sequence intact;

d) recycling of the target nucleic acid sequence by repeating steps (a) to (c); and

- e) detecting cleaved labeled probe, thereby determining the presence of said target nucleic acid sequence, and
- f) hybridizing said target nucleic acid sequence to a third nucleic acid oligonucleotide comprising the nucleotide sequence of SEQ ID No 14 from nucleotide 312 to nucleotide 329 or its complement or said third nucleic acid oligonucleotide comprising the nucleotide sequence of SEQ ID No 15 from nucleotide 490 to nucleotide 507 or its complement;
- 5 g) hybridizing said target nucleic acid sequence to a fourth nucleic acid oligonucleotide comprising the nucleotide sequence of SEQ ID No 14 from nucleotide 294 to nucleotide 311 or its complement or said fourth nucleic acid oligonucleotide comprising the nucleotide sequence of SEQ ID No 15 from nucleotide 508 to nucleotide 525 or its complement, wherein said third and fourth oligonucleotide overlap by at least one nucleotide, and wherein 10 either said third or said fourth oligonucleotide is labeled to be said labeled nucleic acid probe;
- h) cleaving only the labeled probe within the probe:target nucleic acid sequence duplex with 15 an enzyme which causes selective probe cleavage resulting in duplex disassociation, leaving the target sequence intact;
- i) recycling of the target nucleic acid sequence by repeating steps (f) to (h); and
- j) detecting cleaved labeled probe, thereby determining the presence of said target nucleic acid sequence.

20 43. Use of a soybean plant, seed or progeny thereof comprising elite event EE-GM3 and EE-GM2, wherein the elite events EE-GM3 and EE-GM2 are as defined in any one of claims 1 to 6, in a method to control weeds in a soybean field, wherein said method includes application of an HPPD inhibitor herbicide and/or glyphosate and/or glufosinate to said plant or seed or field, and wherein said plant, seed, or progeny are tolerant to the HPPD 25 inhibitor herbicide and/or glyphosate and/or glufosinate.

44. Use of elite events EE-GM3 and EE-GM2 as defined in any one of claims 1 to 6, to produce a transgenic soybean plant or seed that is tolerant to an HPPD inhibitor herbicide.

45. The use of claim 43 or 44, wherein the genomic DNA of said plant, seed or progeny, when analyzed using PCR with two primers, the nucleotide sequences of which are the nucleotide 30 sequences of SEQ ID No 4 and SEQ ID No 5 respectively, yields a DNA fragment of

about 263 bp and when analyzed using PCR with two primers, the nucleotide sequences of which are the nucleotide sequences of SEQ ID No 18 and SEQ ID No 19 respectively, yields a DNA fragment of about 151 bp.

46. Use of a soybean plant or seed comprising elite event EE-GM3 and elite event EE-GM2 in
5 its genome to grow a herbicide-tolerant plant, wherein said elite events are as defined in any one of claims 1 to 6.

47. The use of claim 46, wherein the soybean plant or seed is tolerant to an HPPD inhibitor herbicide.

48. The use of claim 46 or 47, wherein said plant or seed when analyzed using PCR with two
10 primers comprising the nucleotide sequence of SEQ ID No 4 and SEQ ID No 5 respectively, yields a DNA fragment of about 263 bp, and when analyzed using PCR with two primers, the nucleotide sequences of which are the nucleotide sequences of SEQ ID No 18 and SEQ ID No 19 respectively, yields a DNA fragment of about 151 bp.

49. Use of a soybean seed comprising elite event EE-GM3 and elite event EE-GM2 to obtain a
15 soybean product, wherein EE-GM3 and EE-GM2 are as defined in any one of claims 1 to 6.

50. The use of claim 49, wherein the soybean seed is tolerant to an HPPD inhibitor herbicide.

51. The use of claim 49 or 50, wherein said seed when analyzed using PCR with two primers comprising the nucleotide sequence of SEQ ID No 4 and SEQ ID No 5 respectively, yields a DNA fragment of about 263 bp, and when analyzed using PCR with two primers, the
20 nucleotide sequences of which are the nucleotide sequences of SEQ ID No 18 and SEQ ID No 19 respectively, yields a DNA fragment of about 151 bp.

52. The use of claim 49, 50 or 51, wherein said soybean product is soybean meal, ground soybean seeds, soybean flour or soybean flakes.

53. A method for producing a soybean plant or seed comprising elite event EE-GM3 and
25 EE-GM2 comprising crossing a plant comprising the elite events EE-GM3 and EE-GM2 as defined in any one of claims 1 to 6 with another soybean plant, selecting seed comprising EE-GM2 and EE-GM3 obtained from said cross, and planting said selected seed, which method includes application of glyphosate or glufosinate or an HPPD inhibitor herbicide, or glyphosate and glufosinate, or glyphosate and an HPPD inhibitor herbicide, or glufosinate

and an HPPD inhibitor herbicide, or glyphosate and glufosinate and an HPPD inhibitor herbicide.

54. Soybean genomic DNA comprising the nucleic acid molecules of any one of claims 9 to 11.
55. Use of a soybean seed comprising elite event EE-GM3 and EE-GM2, wherein the elite events EE-GM3 and EE-GM2 are as defined in any one of claims 1 to 6, to obtain a soybean product.
56. The use of claim 55, wherein said soybean product is or comprises meal, ground seeds, flour, or flakes.
57. The use of claim 55 or 56, wherein said soybean product comprises nucleic acid that produces an amplicon diagnostic for elite event EE-GM3 and an amplicon diagnostic for elite event EE-GM2.
58. Use of a soybean seed comprising the elite event EE-GM3 and EE-GM2, wherein the elite events EE-GM3 and EE-GM2 are as defined in any one of claims 1 to 6, and an HPPD inhibitor herbicide, to control weeds in a soybean field.
- 15 59. The use of any one of claims 43 to 48 or 58, wherein said elite event EE-GM3 comprises the DNA sequence of SEQ ID No 20.
60. Use of a soybean seed comprising elite event EE-GM3 and elite event EE-GM2 in a method of growing soybeans tolerant to an HPPD inhibitor-based herbicide, to a glufosinate-based herbicide and to a glyphosate-based herbicide, wherein the elite events EE-GM3 and EE-GM2 are as defined in any one of claims 1 to 6.
- 20 61. The use of any one of claims 55 to 57, wherein said elite event comprises the sequence of SEQ ID No 20.
62. A method for controlling weeds in a field of soybean plants comprising elite events EE-GM3 and EE-GM2, wherein the elite events EE-GM3 and EE-GM2 are as defined in any one of claims 1 to 6, comprising treating the field with an effective amount of an isoxaflutole-based herbicide, wherein said soybean plants are tolerant to said isoxaflutole-based herbicide.
- 25 63. A method for controlling weeds in a field of soybean plants comprising elite events EE-GM3 and EE-GM2, wherein the elite events EE-GM3 and EE-GM2 are as defined in

any one of claims 1 to 6, comprising treating said plants with an HPPD inhibitor herbicide over the top of the soybean plants, wherein said soybean plants are tolerant to said herbicide.

64. The method according to claim 63, wherein treatment of said plants with an HPPD inhibitor herbicide is made together with, followed by or preceded by, a treatment with glyphosate or 5 glufosinate as a post-emergent herbicide over the top of the plants, wherein said soybean plants are also tolerant to glyphosate and glufosinate.

65. A method for controlling weeds in a field of soybean plants comprising elite events EE-GM3 and EE-GM2, wherein the elite events EE-GM3 and EE-GM2 are as defined in any one of claims 1 to 6, comprising treating said plants with glyphosate or glufosinate or an 10 HPPD inhibitor herbicide, or glyphosate and glufosinate, or glyphosate and an HPPD inhibitor herbicide, or glufosinate and an HPPD inhibitor herbicide, or glyphosate and glufosinate and an HPPD inhibitor herbicide over the top of the soybean plants, wherein said soybean plants are tolerant to said HPPD inhibitor herbicide, to glufosinate and to glyphosate.

15 66. Use of any of the following insecticide, herbicide or fungicide, or any combination thereof, on soybean plants or seeds comprising the elite events EE-GM3 and EE-GM2 as defined in any one of claims 1 to 6:

wherein the herbicide is any of: Alachlor, Bentazone, Trifluralin, Chlorimuron-Ethyl, Cloransulam-Methyl, Fenoxaprop, Fomesafen, Fluazifop, Glyphosate, Imazamox, 20 Imazaquin, Imazethapyr, (S)-Metolachlor, Metribuzin, Pendimethalin, Tepraloxydim, Isoxaflutole, or any combination thereof;

wherein the insecticide is any of: Lambda-cyhalothrin, Methomyl, Parathion, Thiocarb, Imidacloprid, Clothianidin, Thiamethoxam, Thiacloprid, Acetamiprid, Dinetofuran, Flubendiamide, RynaxypyrTM, CyazypyrTM, Spinosad, Spinotoram, Emamectin-Benzoate, 25 Fipronil, Ethiprole, Deltamethrin, β -Cyfluthrin, gamma and lambda Cyhalothrin, 4-[(6-Chlorpyridin-3-yl)methyl](2,2-difluorethyl)amino]furan-2(5H)-one, Spirotetramat, Spinodiclofen, Triflumuron, Flonicamid, Thiodicarb, beta-Cyfluthrin, or any combination thereof; and

wherein the fungicide is any of: Azoxystrobin, Cyproconazole, Epoxiconazole, Flutriafol, Pyraclostrobin, Tebuconazole, Trifloxystrobin, Prothioconazole, Tetraconazole, or any combination thereof.

67. Use of elite events EE-GM3 and EE-GM2 as defined in any one of claims 1 to 6, to confer tolerance in a soybean plant or seed to glyphosate, glufosinate and to an HPPD inhibitor herbicide.
- 5 68. Use of a soybean plant or seed comprising elite events EE-GM3 and EE-GM2, wherein the elite events EE-GM3 and EE-GM2 are as defined in any one of claims 1 to 6, in combination with glyphosate or glufosinate or an HPPD inhibitor herbicide, or glyphosate 10 and glufosinate, or glyphosate and an HPPD inhibitor herbicide, or glufosinate and an HPPD inhibitor herbicide, or glyphosate, glufosinate and an HPPD inhibitor herbicide, for growing a field of soybean.
- 15 69. The method of claim 14, wherein said soybean product is or comprises soybean meal, ground seeds, flour, or flakes, and comprises nucleic acids specific for elite event EE GM3 and EE-GM2, wherein said nucleic acids are detectable using the method of any one of claims 27 to 32, 37 or 42.
70. The cell of any one of claims 1 to 8 which is a seed cell.
71. The method of claim 53, wherein said elite event EE-GM3 comprises the sequence of SEQ ID No 20.
- 20 72. The method of claim 37, wherein the sequence of said first specific probe has at least 80 % sequence identity with SEQ ID No 2 from nucleotide 1431 to 1472 or SEQ ID No 3 from nucleotide 220 to 261, or the complement of said sequences and wherein the sequence of said second specific probe has at least 80 % sequence identity with SEQ ID No 14 from nucleotide 301 to 322 or SEQ ID No 15 from nucleotide 497 to 518, or the complement of 25 said sequences.

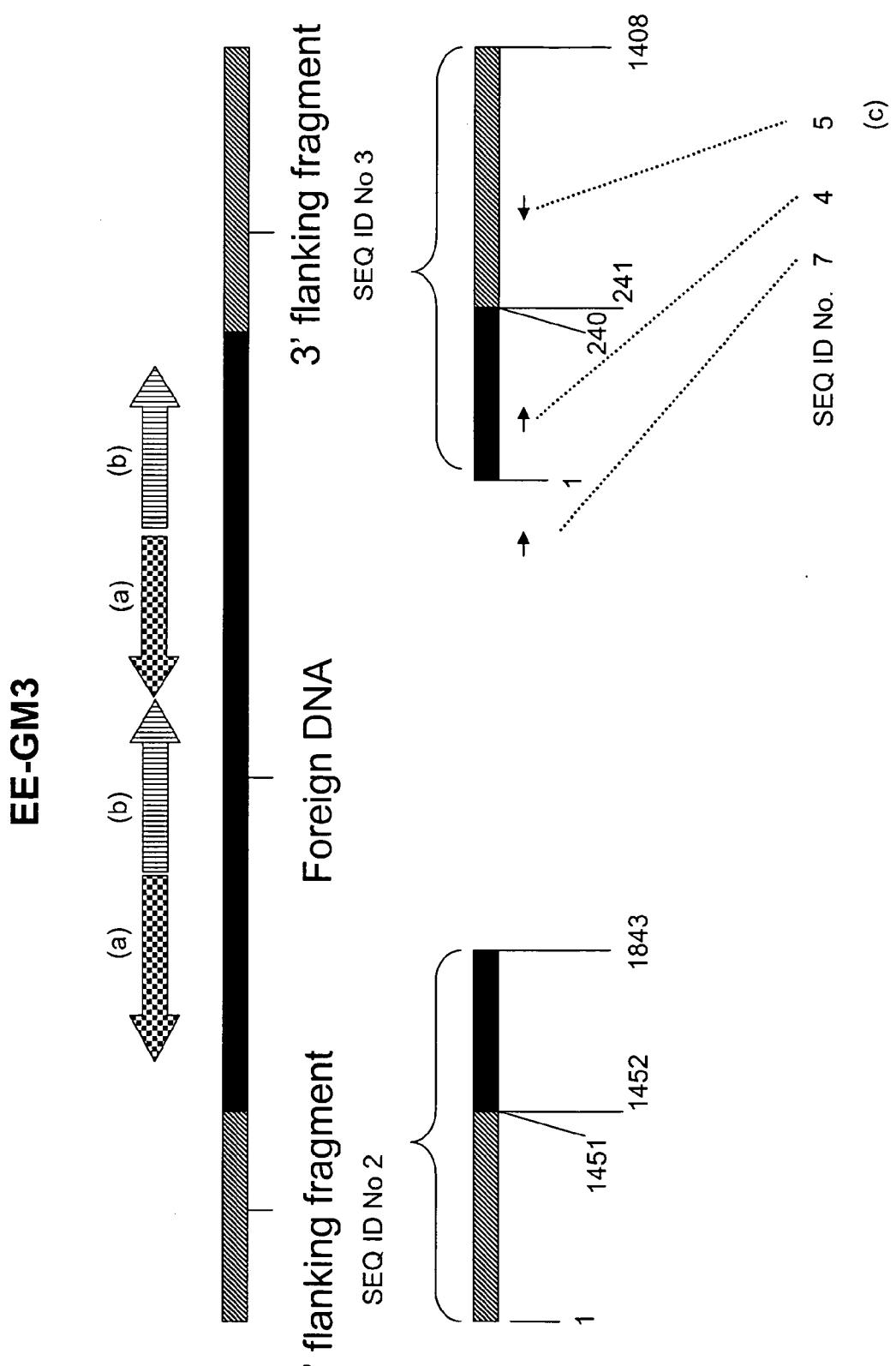
**Fig. 1**



Fig. 2

EE-GM1

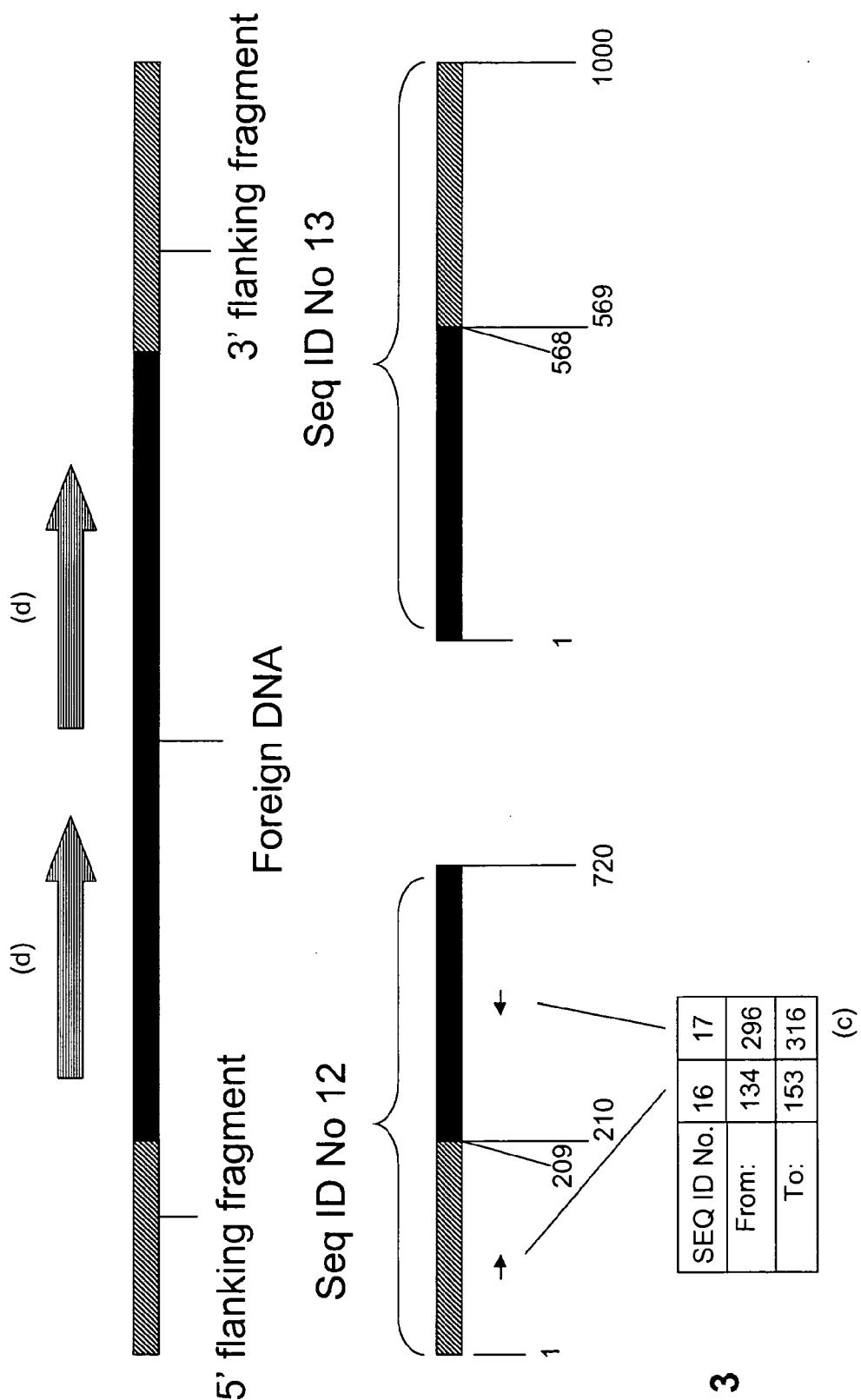


Fig. 3

EE-GM2

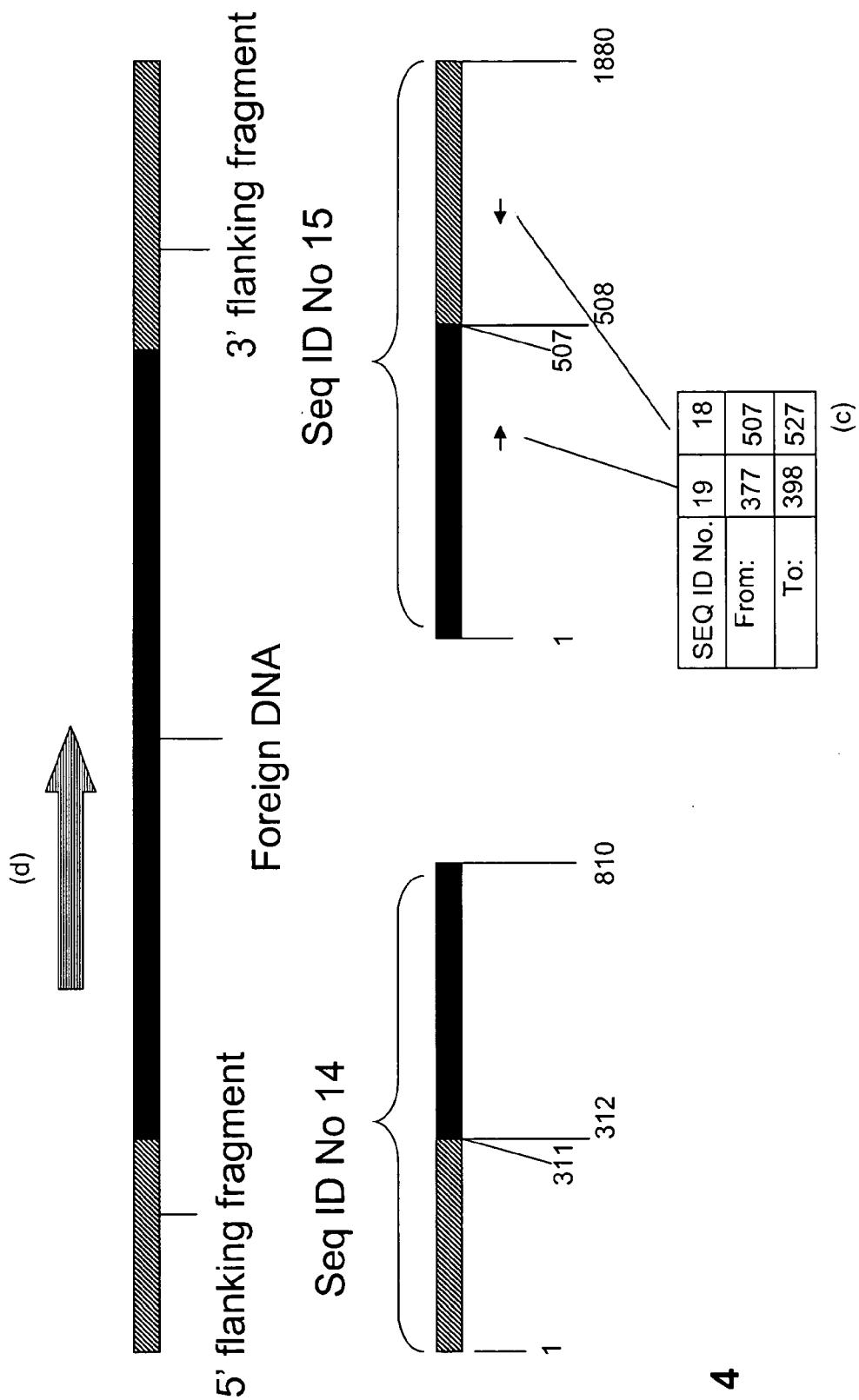


Fig. 4

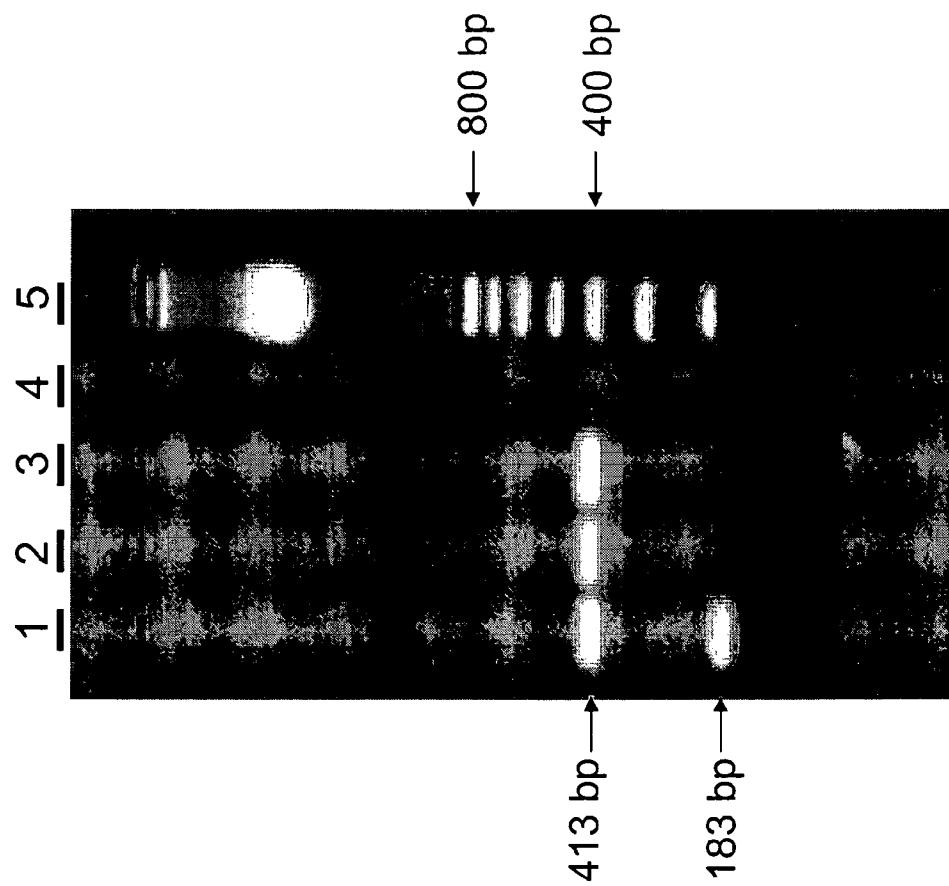


Fig. 5

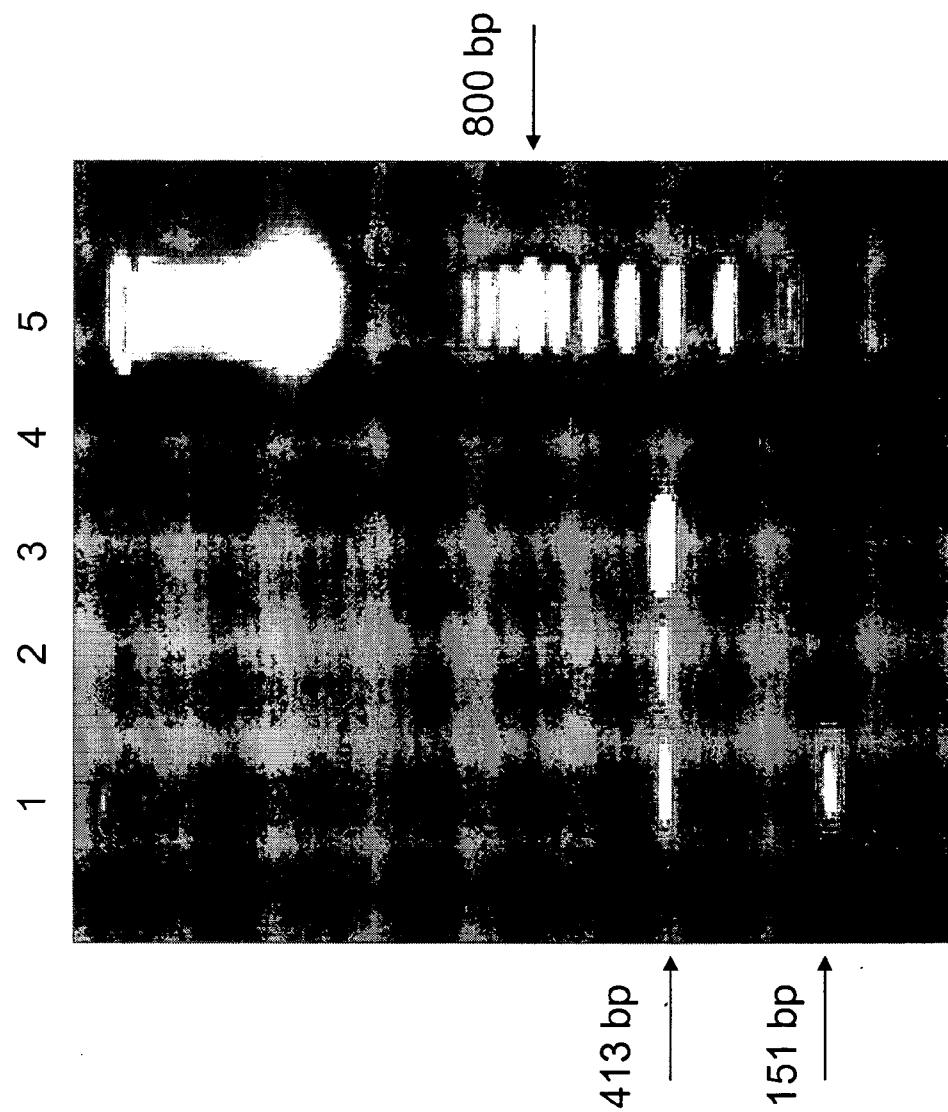


Fig. 6

EE-GM3

