presence of the transgene (in a 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 genetically transformed plants are only the first in a series of selection steps, which include extensive genetic characterization, breeding, and evaluation in field trials, eventually leading to the selection of an elite event.

The ability to clearly detect and/or identify particular transgenic events is becoming increasingly important because of the increased use of genetic modification in crop improvement, to improve introgression of transgenes into commercial varieties, for segregation of GMO and non-GMO products, and the identification of proprietary material. There remains a need for the development of methods that are both quick and simple, without the need for an extensive laboratory set-up, for the detection of particular transgenic events. In addition, methods for detecting a particular event would be helpful for complying with regulations requiring the pre-market approval and labeling of foods derived from recombinant crop plants, or for use in environmental monitoring, monitoring traits in crops in the field, or monitoring products derived from a crop harvest, as well as, for use in ensuring compliance of parties subject to regulatory or contractual terms.

SUMMARY

[0006] In one embodiment, the present ~~invention~~disclosure provides methods for controlling weeds in a cultivated area, comprising: applying an effective amount of a non-selective herbicide to the cultivated area having a soybean plant comprising an event 127 nucleic acid molecule.

[0007] In another embodiment, the present ~~invention~~disclosure provides methods for controlling glyphosate tolerant weeds in a crop field, comprising: applying an effective amount of an AHAS-inhibiting herbicide to the crop field having a soybean plant comprising an event 127 nucleic acid molecule.

[0008] In still another embodiment, the present ~~invention~~disclosure provides an isolated nucleic acid molecule having the nucleic acid sequence of positions 1312 to 6069 of SEQ ID NO:1.

[0009] In another embodiment, the present ~~invention~~disclosure also provides transgenic soybean plants having a heterologous nucleic acid molecule having the nucleic acid sequence of nucleotides 1302 to 6079 of SEQ ID NO:1.

[0010] The present ~~invention~~disclosure also provides an isolated pair of nucleic acid primers comprising: a first and a second isolated nucleic acid molecule capable of amplifying an event 127 nucleic acid molecule.

[0011] In another embodiment, the present ~~invention~~disclosure provides a kit for identifying an event 127 nucleic acid molecule in a biological sample, comprising: a first and a second nucleic acid primer, wherein the first and second nucleic acid primers are capable of amplifying an event 127 nucleic acid molecule.

[0012] The present ~~invention~~disclosure also provides methods for identifying an event 127 soybean plant, comprising: (a) forming a mixture comprising a biological sample containing soybean DNA and a first and second nucleic acid primer capable of amplifying an event 127 specific nucleic acid molecule; (b) reacting the mixture under conditions that allow the first and second nucleic acid primers to amplify an event 127 specific nucleic acid molecule; and (c) detecting the presence of the amplified fragment nucleic acid molecule, wherein the presence of the soybean event 127 specific nucleic acid molecule indicates that the soybean plant is an event 127 soybean plant.

[0013] In still a further embodiment, the present ~~invention~~disclosure provides methods for identifying a soybean plant having an event 127 nucleic acid molecule, comprising: (a) forming a mixture comprising a biological sample containing soybean DNA and a nucleic acid molecule probe that is capable of hybridizing to an event 127 specific nucleic acid molecule; (b) reacting the mixture under conditions that allow the nucleic acid molecule probe to hybridize to an event 127 specific nucleic acid molecule; and (c) detecting hybridization of the probe to the DNA, wherein the presence of hybridization of the nucleic acid molecule probe to the soybean DNA indicates the presence of an event 127 nucleic acid molecule.

[0014] The present ~~invention~~disclosurefurther provides methods for increasing yield in a soybean plant comprising an event 127 nucleic acid molecule, the method comprising: applying an effective amount of an AHAS-inhibiting herbicide to one or more soybean plants comprising an event 127 nucleic acid molecule and the

surrounding area, wherein the AHAS-inhibiting herbicide reduces weed growth in the surrounding area; and harvesting seed from the one or more soybean plants.

[0015] In another embodiment, the present ~~invention~~disclosure provides methods for breeding an AHAS-inhibiting-herbicide-resistant soybean plant, comprising: (a) crossing a soybean plant comprising an event 127 nucleic acid molecule with a second soybean plant; (b) obtaining seed from the cross of step (a); (c) obtaining a DNA sample from the seed; and (d) detecting the presence of an event 127 nucleic acid molecule in the sample, where the presence of the event 127 nucleic acid molecule indicates that the seed is capable of producing an AHAS-inhibiting-herbicide-resistant soybean plant.

[0016] The present ~~invention~~disclosure also provides a seed of soybean plant comprising an event 127 nucleic acid molecule.

[0017] In still another embodiment, the present ~~invention~~disclosure provides methods for detecting the presence of an event 127 nucleic acid molecule in a biological sample, comprising: (a) forming a mixture comprising a biological sample containing DNA and a first and second nucleic acid primer capable of amplifying an event 127 specific nucleic acid molecule; (b) reacting the mixture under conditions that allow the first and second nucleic acid primers to amplify the nucleic acid molecule comprising an event 127 specific nucleic acid molecule; and (c) detecting the presence of the amplified nucleic acid molecule, wherein the presence of the event 127 specific nucleic acid molecule indicates that the sample contains event 127 nucleic acid molecule.

[0018] In another embodiment, the present ~~invention~~disclosure provides methods for detecting an event 127 nucleic acid molecule in a biological sample comprising: (a) forming a mixture comprising a biological sample containing DNA and a nucleic acid probe capable of hybridizing to an event 127 specific nucleic acid molecule; (b) reacting the mixture under conditions that allow the probe to hybridize to an event 127 specific nucleic acid molecule; and (c) detecting the presence of a hybridized nucleic acid molecule, wherein the presence of the event 127 specific nucleic acid molecule indicates that the sample contains event 127 nucleic acid molecule.

[0019] The present ~~invention~~disclosure also provides methods for detecting the presence of an event 127 insert nucleic acid molecule in a biological sample, comprising: (a) forming a mixture comprising a biological sample containing DNA and a first and a second primer capable of amplifying an event 127 insert nucleic acid molecule; (b) reacting the mixture under conditions that allow the first and second nucleic acid primers to amplify the nucleic acid molecule comprising an event 127 insert nucleic acid molecule; and (c) detecting the presence of the amplified nucleic acid molecule, wherein the presence of the event 127 insert nucleic acid molecule indicates that the sample contains event 127 insert DNA.

[0020] In yet another embodiment, the present ~~invention~~disclosure provides methods for detecting the presence of an event 127 insert nucleic acid molecule in a biological sample, comprising: (a) forming a mixture comprising a biological sample containing DNA and a first primer capable of annealing to a region of the event 127 insert nucleic acid molecule and a second primer capable of annealing to a flanking nucleic acid molecule in a host cell genome; (b) reacting the mixture under conditions that allow the first and second nucleic acid primers to produce an amplified nucleic acid molecule comprising a fragment of the event 127 insert nucleic acid molecule; and (c) detecting the presence of the amplified nucleic acid molecule, wherein the presence of the fragment of the event 127 insert nucleic acid molecule indicates that the sample contains event 127 insert DNA.

[0021] In another embodiment, the present ~~invention~~disclosure provides methods for growing a soybean plant, comprising: (a) providing a soybean seed comprising an event 127 nucleic acid molecule; (b) planting the soybean seed in a growth medium under conditions that allow the seed to germinate to produce a growing soybean plant comprising an event 127 nucleic acid molecule; and (c) contacting the growth medium, seed, or plant with an herbicidal composition comprising at least one component selected from the group consisting of imidazolinone herbicides, sulfonylurea herbicides, combinations thereof with one another, and combinations thereof with at least one other active ingredient.

[0022] In still another embodiment, the present ~~invention~~disclosure provides methods for detecting an event 127 polypeptide in a sample, comprising: obtaining a biological

sample from a soybean plant; and conducting at least one immunological assay on the sample, wherein the assay is capable of detecting an event 127 polypeptide.

[0023] The present ~~invention~~disclosure also provides devices for use in detecting biological molecules, comprising: a solid support having a surface; and at least one event 127 diagnostic molecule attached to the surface of the solid support.

[0023a] In another embodiment, there is provided a method for controlling weeds in a cultivated area comprising:

applying an effective amount of an herbicidal composition comprising an AHAS-inhibiting imidazolinone herbicide to the cultivated soybean area having a soybean plant comprising a nucleic acid molecule that comprises a nucleic acid sequence of positions 1312-6069 of SEQ ID NO:1, wherein said nucleic acid sequence allows said soybean plant to be discriminately identified, and wherein the effective amount would inhibit the growth of weeds in the cultivated soybean area.

[0023b] In another embodiment, there is provided a method for controlling glyphosate tolerant weeds in a soybean crop field comprising:

applying an effective amount of an herbicidal composition comprising an AHAS-inhibiting imidazolinone herbicide to the soybean crop field having a soybean plant comprising a nucleic acid molecule that comprises a nucleic acid sequence of positions 1312-6069 of SEQ ID NO:1, and glyphosate tolerant weeds, wherein said nucleic acid sequence allows said soybean plant to be discriminately identified, and wherein the effective amount would inhibit the growth of glyphosate tolerant weeds in the soybean crop field.

[0023c] In another embodiment, there is provided an isolated or recombinant nucleic acid molecule encoding a modified form of AHSL protein, comprising a serine to asparagine substitution at a position 653 (S653N) and comprising the nucleic acid sequence of positions 1312 to 6069 of SEQ ID NO:1, wherein the nucleic acid sequence allows the nucleic acid molecule to be discriminately identified.

[0023d] In another embodiment, there is provided a transgenic soybean plant comprising the isolated or recombinant nucleic acid molecule as disclosed herein.

[0023e] In another embodiment, there is provided a transgenic soybean plant comprising a heterologous nucleic acid molecule comprising the nucleic sequence of nucleotides 1302 to 6079 of SEQ ID NO:1, wherein the nucleic acid sequence allows the nucleic acid molecule to be discriminately identified.

[0023f] In another embodiment, there is provided an isolated pair of nucleic acid primers for use in the amplification of a target nucleic acid molecule comprising:

a first and a second isolated nucleic acid molecule, wherein the first isolated nucleic acid molecule comprises a nucleic acid sequence selected from SEQ ID NOs:37, 39, 41, 43, and 67 and the second isolated nucleic acid molecule comprises a nucleic acid sequence selected from SEQ ID NOs:38, 40, 42, 44, and 68.

[0023g] In another embodiment, there is provided a method for detecting the presence of a soybean plant comprising a nucleic acid molecule comprising the nucleic acid sequence of positions 1312 to 6069 of SEQ ID NO: 1 in a biological sample, comprising:

(a) forming a mixture comprising a biological sample containing soybean DNA and a first and second nucleic acid primer, wherein the first nucleic acid primer comprises a nucleic acid sequence selected from SEQ ID NOs:37, 39, 41, 43, and 67 and the second nucleic acid primer comprises a nucleic acid sequence selected from SEQ ID NOs:38, 40, 42, 44, and 68;

(b) reacting the mixture under conditions that allow the first and second nucleic acid primers to amplify a nucleic acid molecule; and

(c) detecting the presence or absence of the amplified nucleic acid molecule, wherein the presence of the amplified nucleic acid molecule allows the nucleic acid molecule to be discriminately identified and indicates that the biological sample comprises the soybean plant comprising a nucleic acid molecule comprising the nucleic acid sequence of positions 1312 to 6069 of SEQ ID NO:1.

[0023h] In another embodiment, there is provided a method for breeding an AHAS-inhibiting-imidazolinone-herbicide-resistant soybean plant, comprising:

(a) crossing a soybean plant comprising a nucleic acid molecule that comprises a nucleic acid sequence from positions 1312-6069 of SEQ ID NO:1 with a second soybean plant;

(b) obtaining seed from the cross of step (a);

(c) obtaining a DNA sample from the seed; and

(d) detecting the presence of a nucleic acid molecule that comprises a nucleic acid sequence from positions 1312-6069 of SEQ ID NO:1 in the sample, where the presence of the nucleic acid molecule that comprises a nucleic acid sequence from positions 1312-6069 of SEQ ID NO:1indicates that the seed is capable of producing an AHAS-inhibiting-imidazolinone-herbicide-resistant soybean plant, and wherein said nucleic acid sequence allows said soybean plant to be discriminately identified.

[0023i] In another embodiment, there is provided a seed of a transgenic soybean plant comprising a nucleic acid molecule encoding a modified form of an AHASL protein, comprising a serine to asparagine substitution at a position 653 (S653N) and comprising and comprising a nucleic acid sequence of positions 1312-6069 of SEQ ID NO:1, wherein said nucleic acid sequence allows said soybean plant to be discriminately identified.

[0023j] In another embodiment, the is provided a method for controlling weeds in a cultivated soybean area, comprising: planting the seed as disclosed herein in the cultivated soybean area.

[0023k] In another embodiment, there is a provided a transgenic soybean plant produced by growing the seed as disclosed herein.

BRIEF DESCRIPTION OF THE DRAWINGS

[0024] Figure 1A provides a schematic representation of the plasmid pAC321. Figure 1B provides a schematic representation of the PvuII fragment of pAC321 containing the *AHASL* 5' UTR, *csr1-2* coding sequence and *AHASL* 3' UTR that was used for transformation. The restriction sites of the enzymes (NcoI, XbaI, SpeI) used for Southern blot analyses of copy number, absence of backbone and intergenerational stability are indicated.

[0025] Figure 2 provides a schematic representation of the breeding history of one example of a soybean event 127 plant.

[0026] Figure 3 provides a schematic representation of an alignment of the pAC321 PvuII transformation fragment with the soybean event 127 Insert.

[0027] Figures 4A-4C provide the results of a Southern blot hybridization of the insert copy number in one example of a soybean event 127 plant as described in Example 3. Figure 4D provides a schematic representation of the relative locations of the probes used in the hybridization experiments.

[0028] Figure 5 provides the results of a Southern blot hybridization showing the absence of vector backbone sequence in one example of a soybean event 127 plant as described in Example 3. Figure 5A provides the results using probe VP1, and Figure 5B provides the results using probe VP2. Figure 5C provides a schematic representation of the relative locations of the regions of hybridization on the 127 event sequence.

[0029] Figure 6 provides the results of a Southern blot hybridization analysis of the intergenerational stability of the event 127 sequence. Figure 6A provides the results using a 5' UTR probe. Figure 6B provides the results using an AHAS probe. Figure 6C provides the results using a 3' UTR probe. Figure 6D provides

CLAIMS

What is claimed is:

1. A method for ~~selective control of~~ controlling weeds in a cultivated area, comprising:

applying an effective amount of an herbicidal composition comprising an AHAS-inhibiting imidazolinone herbicide to the cultivated soybean area having a soybean plant comprising a nucleic acid molecule that comprises a nucleic acid sequence of positions 1312-6069 of SEQ ID NO:1, wherein said nucleic acid sequence allows said soybean plant to be discriminately identified, and wherein the effective amount would inhibit the growth of weeds in the cultivated soybean area ~~and of wild-type soybean plants~~.

2. The method of claim 1, wherein the nucleic acid molecule comprises a nucleic acid sequence of positions 1302-6079 of SEQ ID NO:1.

3. The method of claim 1, wherein the nucleic acid molecule comprises the nucleic acid sequence of SEQ ID NO:1.

4. The method of claim 1, wherein the herbicidal composition further comprises one or more of other imidazolinone herbicides, other AHAS-inhibiting herbicides, EPSPS-inhibiting herbicides, GS-inhibiting herbicides, PPO-inhibiting herbicides, auxinic herbicides, and combinations thereof.

5. The method of claim 4, wherein the AHAS-inhibiting imidizolinone herbicide is selected from imazapyr, imazapic, or a combination thereof.

6. The method of claim 1 further comprising applying, to the cultivated soybean area, an effective amount of one or more of other imidazolinone herbicides, other AHAS-ihibiting herbicides, EPSPS-inhibiting herbicides, GS-inhibiting herbicides, PPO-inhibiting herbicides, auxinic herbicides, and combinations thereof.

7. The method of any one of claims 4 or 6, wherein the EPSPS-inhibiting herbicide comprises glyphosate and the PPO-inhibiting herbicide comprises saflufenacil.

8. The method of claim 1, wherein the weeds are resistant to glyphosate.

9. The method of claim 1, wherein the method further comprises applying a strobilurin to the cultivated soybean area.

10. The method of claim 9, wherein strobilurin comprises pyraclostrobin.

11. The method of claim 1, wherein the herbicidal composition comprises

imazapyr;

imazapic;

or any one of the following:

a combination of imazapyr and imazapic;

a combination of imazapyr, imazapic, and bentazon;

a combination of imazapyr, imazapic, and pyraclostrobin;

a combination of imazapyr, imazapic, and saflufenacil;

a combination of imazapyr, imazapic, saflufenacil, and glyphosate;

a combination of imazapyr and bentazon;

a combination of imazapyr and pyraclostrobin;

a combination of imazapyr and saflufenacil;

a combination of imazapyr, saflufenacil, and glyphosate;

a combination of imazapyr and glyphosate;

a combination of imazapic and glyphosate; and

a combination of imazapic, saflufenacil, and glyphosate.

12. A method for ~~selective control of~~controlling glyphosate tolerant weeds in a soybean crop field, comprising:

applying an effective amount of an herbicidal composition comprising an AHAS-inhibiting imidazolinone herbicide to the soybean crop field having a soybean plant comprising a nucleic acid molecule that comprises a nucleic acid sequence of positions 1312-6069 of SEQ ID NO:1, and glyphosate tolerant weeds, wherein said nucleic acid sequence allows said soybean plant to be discriminately identified, and wherein the effective amount would inhibit the growth of glyphosate tolerant weeds in the soybean crop ~~filed~~field ~~of wild-type soybean plants~~.

13. The method of claim 12, wherein the soybean plant comprises a nucleic acid molecule having the nucleic acid sequence of SEQ ID NO:1.

27. The seed of claim 26, wherein the nucleic acid molecule comprises the nucleic acid sequence of SEQ ID NO:1.

28. The seed of claim 26, wherein the seed is of a plant of, or is of a plant that is a progeny of, line 'BPS-CV127-9', a representative sample of said seed of said line having been deposited under NCIMB Accession No. 41603.

29. The seed of claim 26, wherein the seed is treated with an herbicidal composition comprising one or more of an AHAS-inhibiting herbicide or a combination of AHAS-inhibiting herbicides.

30. A method for ~~selective control of~~controlling weeds in a cultivated soybean area, comprising:
planting the seed of claim 29 in the cultivated soybean area.

31. A transgenic soybean plant produced by growing the seed of claim 26.