What is claimed is:

1. A transgenic corn plant cell comprising a polynucleotide having the sequence of SEQ ID NO:1, SEQ ID NO:2, or the complement thereof.

2. The transgenic corn plant cell of claim 1, comprising a polynucleotide having the sequence of SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5 or the complement thereof.

3. The transgenic corn plant cell of claim 1 or 2, obtained from MON89034 corn event, a representative sample of seed of said corn event deposited with the American Type Culture Collection under accession number PTA-7455.

4. A transgenic corn plant, or parts thereof, comprising a polynucleotide having the sequence of SEQ ID NO:1, SEQ ID NO:2, or the complement thereof.

5. The transgenic corn plant, or parts thereof, of claim 4, comprising a polynucleotide having the sequence of SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, or the complement thereof.

6. The transgenic corn plant, or parts thereof, of claim 5, a representative sample of seed of said corn plant deposited with the American Type Culture Collection under accession number PTA-7455.

7. Seed of the transgenic corn plant of claim 4 or 5, wherein said seed comprises said polynucleotide.

8. An insect resistant corn plant, or parts thereof, wherein DNA encoding Cry2Ab and DNA having the nucleotide sequences of SEQ ID NO:1 and SEQ ID NO:2 form a part of the genome in the cells of said corn plant or parts thereof.

9. The insect resistant corn plant, or parts thereof, of claim 8, further comprising DNA encoding Cry1A.105.

10. Seed of the insect resistant corn plant of claim 8 or 9, wherein said seed comprises said DNA encoding Cry2Ab and said DNA having the nucleotide sequences of SEQ ID NO:1 and SEQ ID NO:2.

11. A composition derived from the transgenic corn plant, or parts thereof, as set forth in any one of claims 4 to 6, wherein said composition comprises a detectable amount of said DNA molecule, and wherein said composition is a commodity product selected from the group consisting of corn meal, corn oil, corn cake, corn seed, corn germ, corn starch, corn flour, corn pollen, corn silk, corn steep liquor, corn malt, corn sugar, corn syrup, margarine produced from corn oil, distillers dry goods solids (DDGS), cosmetic and bulking agent.

12. A method of producing an insect resistant corn plant comprising:
    (a) crossing the transgenic corn plant of any one of claims 4 to 6 with a different corn plant;
    (b) obtaining at least one progeny plant derived from the cross of (a); and
    (c) selecting progeny that comprise the polynucleotides having the nucleotide sequences of SEQ ID NO:1 and SEQ ID NO:2, wherein said selected progeny is an insect resistant corn plant.

13. The method of claim 12, wherein said selecting step (c) includes subjecting said at least one progeny plant obtained from (b) to a nucleic acid amplification reaction, wherein progeny that produces an amplicon comprising at least one polynucleotide having the sequence of SEQ ID NO:1 or SEQ ID NO:2 is selected, or subjecting said at least one progeny plant obtained from (b) to a nucleic acid hybridization reaction, wherein progeny hybridizing to a probe that hybridizes under stringent conditions with one or more DNA sequence selected from SEQ ID NO:1 and SEQ ID NO:2 is selected.

14. A method of producing an insect resistant corn plant, comprising

(a) transforming a corn plant cell with a polynucleotide having the sequence of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, or SEQ ID NO:5; and

(b) regenerating a corn plant from said transformed cell, wherein said corn plant comprises said DNA molecule and is insect resistant.

15. A method for protecting a corn plant from insect infestation, comprising providing in the diet of a Lepidopteran pest of corn an insecticidally effective amount of cell(s) or tissue(s) of the transgenic corn plant, or parts thereof, of any one of claims 4, 5, 6, 8 and 9.

16. The method of claim 15, wherein said Lepidopteran pest is selected from the group consisting of Fall armyworm (*Spodoptera frugiperda*), European corn borer (*Ostrinia nubilalis*), corn earworm (*Helicoverpa zea*), southwestern corn borer (*Diatraea grandiosella*), and black cutworm (*Agrotis ipsilon*).

17. A pair of DNA molecules comprising: a first DNA molecule and a second DNA molecule, wherein the DNA molecules are of sufficient length of contiguous nucleotides of SEQ ID NO:3 or SEQ ID NO:5 or its complement to function as DNA primers or probes diagnostic for DNA extracted from corn plant MON89034 or progeny thereof.

18. The pair of DNA molecules of claim 17, wherein said first DNA molecule comprises at least 20 contiguous nucleotides of any portion of the transgene region of SEQ ID NO:3 or SEQ ID NO:5, or the complement thereof, and said second DNA molecule comprises a similar length of a 5' flanking corn genomic DNA region of SEQ ID NO:3, or the complement thereof.

19. The pair of DNA molecules of claim 18, wherein said first DNA molecule comprises at least at least 20 contiguous nucleotides complementary to the heterologous insert DNA portion of SEQ ID NO:5, and wherein said second DNA molecule comprises at least at least 20 contiguous nucleotides from the corn genome portion of SEQ ID NO:3.

20. The pair of DNA molecule of claim 18, wherein said first DNA molecule hybridizes specifically to SEQ ID NO:5 from about nucleotide position 2060 through about nucleotide position 12,208, and wherein said second DNA molecule hybridizes specifically to the reverse complement sequence corresponding to SEQ ID NO:3 from about nucleotide position 1 through about position 2050.

21. A pair of DNA molecules comprising: a first DNA molecule and a second DNA molecule, wherein the DNA molecules are of sufficient length of contiguous nucleotides of SEQ ID NO:4 or SEQ ID NO:5 or its complement to function as DNA primers or probes diagnostic for DNA extracted from corn plant MON89034 or progeny thereof.

22. The pair of DNA molecules of claim 21, wherein said first DNA molecule comprises at least 20 contiguous nucleotides of any portion of the transgene region of SEQ ID NO:4 or SEQ ID NO:5, or the complement thereof, and said second DNA molecule comprises a similar length of a 3' flanking corn genomic DNA region of SEQ ID NO:4, or the complement thereof.

23. The pair of DNA molecules of claim 22, wherein said first DNA molecule comprises at least at least 20 contiguous nucleotides from the heterologous insert DNA portion of SEQ ID NO:5, and wherein said second DNA molecule comprises at least at least 20 contiguous nucleotides complementary to the corn genome portion of SEQ ID NO:4.

24. The pair of DNA molecules of claim 22, wherein said first DNA molecule hybridizes specifically to the reverse complement sequence corresponding to SEQ ID NO:5 from about nucleotide position 1 through about position 11305, and wherein said second DNA molecule hybridizes specifically to SEQ ID NO:4 from about nucleotide position 21 through about nucleotide position 914.

25. The pair of DNA molecules of any one of claims 17 to 24, wherein said first DNA molecule comprises SEQ ID NO:6 and said second DNA molecule comprises SEQ ID NO:7.

26. A method of detecting the presence of corn event MON89034 DNA in a biological sample, the method comprising:

(a) contacting said biological sample with a DNA primer pair comprising DNA molecules of sufficient length of contiguous nucleotides of SEQ ID NO:3 or its complement, SEQ ID NO:4 or its complement, SEQ ID NO:5 or its complement, to function as DNA primers or probes diagnostic for DNA extracted from corn plant MON89034 or progeny thereof;

(b) providing a nucleic acid amplification reaction condition;

(c) performing said nucleic acid amplification reaction, thereby producing a DNA amplicon molecule; and

(d) detecting said DNA amplicon molecule, wherein detection of an amplicon comprising at least one of SEQ ID NO:1, SEQ ID NO:2 and complement thereof is indicative of the presence of said corn event MON89034 DNA in said biological sample.

27. The method of claim 26, wherein said biological sample is a DNA sample extracted from a corn plant.

28. A method of detecting the presence of corn event MON89034 DNA in a biological sample, the method comprising:

(a) contacting said biological sample with a DNA probe that hybridizes under stringent conditions with one or more of the nucleotide sequences as set forth in SEQ ID NO:1 or SEQ ID NO:2 or the complement thereof;

(b) subjecting said biological sample and DNA probe to stringent hybridization conditions; and

(c) detecting hybridization of said DNA probe to said biological sample, wherein detection of hybridization is indicative of the presence of said corn event MON89034 DNA in said biological sample.

29. The method of claim 28, wherein said biological sample is a DNA sample extracted from a corn plant.

30. The method of claim 28 or 29, wherein said DNA probe comprises the nucleotide sequence as set forth in SEQ ID NO:1 or SEQ ID NO:2 or the complement thereof.

31. The method of claims 28 to 30, wherein said DNA probe is labeled with at least one fluorophore.

32. The method of claim 26 or 28, wherein said biological sample is selected from the group consisting of corn meal, corn oil, corn cake, corn seed, corn germ, corn starch, corn flour, corn pollen, corn silk, corn steep liquor, corn malt, corn sugar, corn syrup, margarine produced from corn oil, distillers dry goods solids (DDGS), cosmetic and bulking agent.

33. A DNA detection kit comprising: at least one DNA molecule of sufficient length of contiguous nucleotides homologous or complementary to the sequences as set forth in SEQ ID NO:3, SEQ ID NO:4, or SEQ ID NO:5 to function as a DNA primer or probe specific for corn event MON89034 and/or its progeny.

34. The DNA detection kit of claim 33, wherein said at least one DNA molecule comprises the sequence as set forth in SEQ ID NO:1, SEQ ID NO:2, or the complement thereof.

35. The DNA detection kit of claim 34, wherein said at least one DNA molecule has the nucleotide sequence as set forth in SEQ ID NO:1, SEQ ID NO:2, or the complement thereof.

36. The DNA detection kit of claim 33, wherein said kit comprises a pair of DNA molecules according to any one of claims 17 to 25.

37. A method of determining zygosity of DNA of a corn plant comprising corn event MON89034 in a biological sample comprising:

(a) contacting said sample with a primer set comprising the nucleotide sequences as set forth in SEQ ID NO:6, SEQ ID NO:7, and SEQ ID NO:10, that (1) when used in a nucleic acid amplification reaction comprising corn event MON89034 DNA, produces a first amplicon that is diagnostic for corn event MON89034, and (2) when used in a nucleic acid amplification reaction comprising corn genomic DNA other than MON89034 DNA, produces a second amplicon that is diagnostic for corn genomic DNA other than MON89034 DNA;

(b) performing a nucleic acid amplification reaction; and

(c) detecting the amplicons so produced, wherein detection of presence of both amplicons indicates that said sample is heterozygous for corn event MON89034 DNA, wherein detection of only the first amplicon indicates that said sample is homozygous for corn event MON89034 DNA.

38. The method of claim 37, wherein said the primer set is further used together with polynucleotides having the sequence as set forth in SEQ ID NO:14 and SEQ ID NO:15.

39. An insect resistant corn plant, or a seed thereof, or a progeny thereof, the genome of said plant, seed or progeny comprises the transgene genetic elements shown in Fig. 1 and junction sequences spanning the insertion site having the sequence as set forth in SEQ ID NO:3 and SEQ ID NO:4, the transgene genetic elements shown in Fig. 1 being present in the corn event MON89034 deposited with American Type Culture Collection (ATCC) with Accession No. PTA-7455.

40. An isolated DNA polynucleotide primer molecule comprising at least 30 contiguous nucleotides of SEQ ID NO:3, or its complement that, when used in a DNA amplification method, produces an amplicon comprising SEQ ID NO:1.

41. An isolated DNA polynucleotide primer molecule comprising at least 30 contiguous nucleotides of SEQ ID NO:4, or its complement that, when used in a DNA amplification method, produces an amplicon comprising SEQ ID NO:2.

42. A DNA detection kit comprising at least one molecule of 30 or more contiguous nucleotides of SEQ ID NO:3 or SEQ ID NO:4 or a complementary sequence thereof that, when used in a DNA amplification method, produces an amplicon comprising the nucleotide sequence as set forth in SEQ ID NO:1 or SEQ ID NO:2.

43. A method of detecting the presence of DNA corresponding to corn plant MON89034 DNA in a sample, the method comprising:

(a) contacting the sample comprising DNA with a primer pair, which when used in a nucleic acid amplification reaction with genomic DNA from corn plant MON89034, produces an amplicon comprising the nucleotide sequence as set forth in SEQ ID NO:1 or SEQ ID NO:2; and

(b) performing a nucleic acid amplification reaction, thereby producing the amplicon; and

(c) detecting the amplicon.

44. A method of detecting the presence of DNA corresponding to corn plant MON89034 DNA in a sample, the method comprising:

(a) contacting the sample comprising DNA with a probe that hybridizes under stringent hybridization conditions with genomic DNA from corn plant MON89034 and does not hybridize under the stringent hybridization conditions with a control corn plant, wherein said probe is homologous or complementary to the nucleotide sequence as set forth in SEQ ID NO:1 or SEQ ID NO:2; and

(b) subjecting the sample and probe to stringent hybridization conditions; and

(c) detecting hybridization of the probe to the DNA.

The claims defining the invention are as follows:

1. A transgenic corn plant cell, or a transgenic corn plant, or parts thereof, or seed thereof, or progeny thereof, comprising a DNA molecule comprising the nucleotide sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4 and SEQ ID NO:5.

2. The transgenic corn plant cell, or the corn plant, or parts thereof, or seed thereof, or progeny thereof, of claim 1, wherein a DNA insert encoding Cry2Ab and Cry1A.105, DNA having the nucleotide sequence of SEQ ID NO:1 and DNA having the nucleotide sequence of SEQ ID NO:2, form a part of the genome of said corn plant cell or of the cells of said corn plant or parts thereof or seed thereof or progeny thereof.

3. The transgenic corn plant cell, or the corn plant, or parts thereof, or seed thereof, or progeny thereof, of claim 2, comprising the nucleotide sequence of SEQ ID NO:5.

4. The transgenic corn plant cell, or the corn plant, or parts thereof, or seed thereof, or progeny thereof, of claim 1, comprising the nucleotide sequence of SEQ ID NO:1.

5. The transgenic corn plant cell, or the corn plant, or parts thereof, or seed thereof, or progeny thereof, of claim 1, comprising the nucleotide sequence of SEQ ID NO:2.

6. The transgenic corn plant cell, or the corn plant, or parts thereof, or seed thereof, or progeny thereof, of claim 1, comprising the nucleotide sequence of SEQ ID NO:3.

7. The transgenic corn plant cell, or the corn plant, or parts thereof, or seed thereof, or progeny thereof, of claim 1, comprising the nucleotide sequence of SEQ ID NO:4.

8. The transgenic corn plant cell, or the corn plant, or parts thereof, or seed thereof, or progeny thereof, of claim 1, comprising the nucleotide sequence of SEQ ID NO:5.

9. The transgenic corn plant cell, or the corn plant, or parts thereof, or seed thereof, or progeny thereof, of any one of claims 1 to 8, comprising MON89034 corn event, a representative sample of seed comprising said corn event having been deposited with the American Type Culture Collection under accession number PTA-7455.

10. A composition derived from the transgenic corn plant cell, corn plant, or parts thereof, or seed thereof, as set forth in any one of claims 1 to 4, wherein said composition comprises a detectable amount of a DNA molecule comprising the nucleotide sequence selected from the group consisting of SEQ ID NO:1 and SEQ ID NO:2, and wherein said composition is a commodity product selected from the group consisting of corn meal, corn oil, corn cake, corn seed, corn germ, corn starch, corn flour, corn pollen, corn silk, corn steep liquor, corn malt, corn sugar, corn syrup, margarine produced from corn oil, distillers dry goods solids (DDGS), cosmetic and bulking agent.

11. A method of producing an insect resistant corn plant comprising:
    (a) crossing the corn plant of any one of claims 1 to 9 with another corn plant;
    (b) obtaining at least one progeny plant derived from the cross of (a); and
    (c) selecting progeny that comprises nucleotide sequences of SEQ ID NO:1 and SEQ ID NO:2, wherein said selected progeny is an insect resistant corn plant.

12. The method of claim 11, wherein said selecting step (c) includes subjecting said at least one progeny plant obtained from (b) to a nucleic acid amplification reaction, wherein progeny that produces an amplicon comprising at least one nucleotide sequence of SEQ ID NO:1 or SEQ ID NO:2 is selected, or subjecting said at least one progeny plant obtained from (b) to a nucleic acid hybridization reaction, wherein progeny hybridizing to a probe that hybridizes under stringent conditions with one or more DNA sequence selected from SEQ ID NO:1 and SEQ ID NO:2 is selected.

13. A method of producing an insect resistant corn plant, comprising
    (a) transforming a corn plant cell with a nucleotide sequence comprising SEQ ID NO:5; and

(b) regenerating a corn plant from said transformed cell, wherein said corn plant comprises said nucleotide sequence and is insect resistant.

14. A method for protecting a corn plant from insect infestation, comprising providing in the diet of a Lepidopteran pest of corn an insecticidally effective amount of cell(s) or tissue(s) of the corn plant, or parts thereof, of any one of claims 1 to 9.

15. The method of claim 14, wherein said Lepidopteran pest is selected from the group consisting of Fall armyworm (*Spodoptera frugiperda*), European corn borer (*Ostrinia nubilalis*), corn earworm (*Helicoverpa zea*), southwestern corn borer (*Diatraea grandiosella*), and black cutworm (*Agrotis ipsilon*).

16. A pair of DNA molecules comprising: a first DNA molecule and a second DNA molecule, wherein the DNA molecules are of sufficient length of contiguous nucleotides of SEQ ID NO:3 or SEQ ID NO:4 or SEQ ID NO:5 or its complement to function as DNA primers or probes when used in diagnosis of DNA extracted from corn plant MON89034 or progeny thereof.

17. The pair of DNA molecules of claim 16, wherein said first DNA molecule comprises at least 20 contiguous nucleotides of any portion of the transgene region of SEQ ID NO:3 or SEQ ID NO:5, or the complement thereof, and said second DNA molecule comprises a similar length of a 5' flanking corn genomic DNA region of SEQ ID NO:3, or the complement thereof, preferably (i) said first DNA molecule comprises at least 20 contiguous nucleotides completely complementary to the heterologous insert DNA portion of SEQ ID NO:5, and wherein said second DNA molecule comprises at least 20 contiguous nucleotides from the corn genome portion of SEQ ID NO:3; or (ii) said first DNA molecule hybridizes specifically to SEQ ID NO:5 from about nucleotide position 2060 through about nucleotide position 12,208, and wherein said second DNA molecule hybridizes specifically to the reverse complement sequence corresponding to SEQ ID NO:3 from about nucleotide position 1 through about position 2050.

18. The pair of DNA molecules of claim 16, wherein said first DNA molecule comprises at least 20 contiguous nucleotides of any portion of the transgene region of SEQ ID NO:4 or SEQ ID NO:5, or the complement thereof, and said second DNA molecule comprises a similar length of a 3' flanking corn genomic DNA region of SEQ ID NO:4, or the complement thereof, preferably (i) said first DNA molecule comprises at least 20 contiguous nucleotides from the heterologous insert DNA portion of SEQ ID NO:5, and wherein said second DNA molecule comprises at least 20 contiguous nucleotides completely complementary to the corn genome portion of SEQ ID NO:4; or (ii) said first DNA molecule hybridizes specifically to the reverse complement sequence corresponding to SEQ ID NO:5 from about nucleotide position 1 through about position 11305, and wherein said second DNA molecule hybridizes specifically to SEQ ID NO:4 from about nucleotide position 21 through about nucleotide position 914.

19. The pair of DNA molecules of any one of claims 16 to 18, wherein

(i) said first DNA molecule comprises SEQ ID NO:6 and said second DNA molecule comprises SEQ ID NO:7; or

(ii) said first and second DNA molecule comprise at least 30 contiguous nucleotides of SEQ ID NO:3, SEQ ID NO:4, or SEQ ID NO:5.

20. A method of detecting the presence of corn event MON89034 DNA in a biological sample, the method comprising:

(a) contacting said biological sample with a DNA primer pair comprising a pair of DNA molecules as set forth in any one of claims 16 to 19;

(b) providing a nucleic acid amplification reaction condition;

(c) performing said nucleic acid amplification reaction, thereby producing a DNA amplicon molecule; and

(d) detecting said DNA amplicon molecule, wherein detection of an amplicon comprising at least one of SEQ ID NO:1, SEQ ID NO:2 and the complement thereof is indicative of the presence of said corn event MON89034 DNA in said biological sample.

21. The method of claim 20, wherein said biological sample is a DNA sample extracted from a corn plant.

22. A method of detecting the presence of corn event MON89034 DNA in a biological sample, the method comprising:

(a) contacting said biological sample with a DNA probe that hybridizes under stringent conditions with one or more of the nucleotide sequences as set forth in SEQ ID NO:1 or SEQ ID NO:2 or the complement thereof;

(b) subjecting said biological sample and DNA probe to stringent hybridization conditions; and

(c) detecting hybridization of said DNA probe to said biological sample, wherein detection of hybridization is indicative of the presence of said corn event MON89034 DNA in said biological sample.

23. The method of claim 22, wherein

(i) said biological sample is a DNA sample extracted from a corn plant; and/or

(ii) said DNA probe comprises SEQ ID NO:1 or SEQ ID NO:2 or the complement thereof; and/or

(iii) said DNA probe is labeled with at least one fluorophore.

24. The method of claim 20 or 22, wherein said biological sample is selected from the group consisting of corn meal, corn oil, corn cake, corn seed, corn germ, corn starch, corn flour, corn pollen, corn silk, corn steep liquor, corn malt, corn sugar, corn syrup, margarine produced from corn oil, distillers dry goods solids (DDGS), cosmetic and bulking agent.

25. A DNA detection kit when used to detect the presence of corn event MON89034 DNA in a biological sample comprising: at least one DNA molecule of sufficient length of contiguous nucleotides homologous or complementary to SEQ ID NO:3, SEQ ID NO:4, or SEQ ID NO:5 to function as a DNA primer or probe specific for corn event MON89034 and/or its progeny.

26. The DNA detection kit of claim 25, wherein

(i) said at least one DNA molecule comprises SEQ ID NO:1, SEQ ID NO:2, or the complement thereof, preferably said at least one DNA molecule is SEQ ID NO:1, SEQ ID NO:2, or the complement thereof; or

(ii) said kit comprises a pair of DNA molecules according to any one of claims 16 to 19.

27. A method of determining zygosity of DNA of a corn plant comprising corn event MON89034 in a biological sample comprising:

(a) contacting said sample with a primer set comprising SEQ ID NO:6, SEQ ID NO:7, and SEQ ID NO:10, that (1) when used in a nucleic acid amplification reaction comprising corn event MON89034 DNA, produces a first amplicon that is diagnostic for corn event MON89034, and (2) when used in a nucleic acid amplification reaction comprising corn genomic DNA other than MON89034 DNA, produces a second amplicon that is diagnostic for corn genomic DNA other than MON89034 DNA;

(b) performing a nucleic acid amplification reaction; and

(c) detecting the amplicons so produced, wherein detection of presence of both amplicons indicates that said sample is heterozygous for corn event MON89034 DNA, wherein detection of only the first amplicon indicates that said sample is homozygous for corn event MON89034 DNA.

28. The method of claim 27, wherein said primer set is further used together with SEQ ID NO:14 and SEQ ID NO:15.

29. A method of detecting the presence of DNA corresponding to corn plant MON89034 DNA in a sample, the method comprising:

(a) contacting the sample comprising DNA with a primer pair, which when used in a nucleic acid amplification reaction with genomic DNA from corn plant MON89034, produces an amplicon comprising SEQ ID NO:1 or SEQ ID NO:2; and

(b) performing a nucleic acid amplification reaction, thereby producing the amplicon; and

(c) detecting the amplicon.

30. A method of detecting the presence of DNA corresponding to corn plant MON89034 DNA in a sample, the method comprising:

(a) contacting the sample comprising DNA with a probe that hybridizes under stringent hybridization conditions with genomic DNA from corn plant MON89034 and does not hybridize under the stringent hybridization conditions with a control corn plant, wherein said probe is homologous or complementary to SEQ ID NO:1 or SEQ ID NO:2; and

(b) subjecting the sample and probe to stringent hybridization conditions; and

(c) detecting hybridization of the probe to the DNA.