

## Biosafety Clearing-House (BCH)

LIVING MODIFIED ORGANISM (LMO)

BCH-LMO-SCBD-112724-1

[? Decisions on the LMO ? Risk Assessments](#)

LAST UPDATED: 14 NOV 2017

### Living Modified Organism identity

The image below identifies the LMO through its unique identifier, trade name and a link to this page of the BCH. Click on it to download a larger image on your computer. For help on how to use it go to the LMO quick-links page.



<https://bch.cbd.int/database/record?documentID=112724>

**MON-87427-7 X MON-89Ø34-3 X DAS-Ø15Ø7-1 X DAS-59122-7**

Insect resistant, herbicide tolerant maize



Read barcode or type above URL into internet browser to access information on this LMO in the Biosafety Clearing-House © SCBD 2012

Name

Insect resistant, herbicide tolerant maize

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Transformation event

MON87427 x MON89034 x TC1507 x 59122

Unique identifier

MON-87427-7 x MON-89Ø34-3 x DAS-Ø15Ø7-1 x DAS-59122-7

Developer(s)

- **ORGANIZATION:** MONSANTO | [BCH-CON-SCBD-14925-3](#)

#### ORGANIZATION

Monsanto  
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Website: <http://www.monsanto.com>

Description

The stacked maize line MON87427 x MON89034 x TC1507 x MON88017 x 59122 was obtained through the traditional cross breeding of each of the parental organisms to produce a maize that expresses each of EPSPS, Cry1A.105, Cry2Ab2, Cry1F, PAT, Cry34Ab1 and Cry35Ab1 genes. The expression of these genes are expected to confer resistance to

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## Lepidoptera and Coleoptera, and tolerant to glufosinate herbicide and glyphosate herbicide

### Recipient Organism or Parental Organisms

The term “Recipient organism” refers to an organism (either already modified or non-modified) that was subjected to genetic modification, whereas “Parental organisms” refers to those that were involved in cross breeding or cell fusion.

**BCH-ORGA-SCBD-246-6** ORGANISM | ZEA MAYS (MAIZE, CORN, MAIZE) |

Crops

**BCH-LMO-SCBD-104758-3** LIVING MODIFIED ORGANISM | MON-87427-7 - MAIZE MODIFIED FOR TISSUE SELECTIVE GLYPHOSATE TOLERANCE |

Resistance to herbicides - Glyphosate

**BCH-LMO-SCBD-43773-18** LIVING MODIFIED ORGANISM | MON-89Ø34-3 - YIELDGARD™ VT PRO™ |

Resistance to diseases and pests - Insects - Lepidoptera (butterflies and moths)

**BCH-LMO-SCBD-14841-13** LIVING MODIFIED ORGANISM | DAS-Ø15Ø7-1 - HERCULEX™ I MAIZE |

Resistance to diseases and pests (Insects, Lepidoptera (butterflies and moths)), Resistance to herbicides (Glufosinate)

**BCH-LMO-SCBD-15165-13** LIVING MODIFIED ORGANISM | DAS-59122-7 - HERCULEX™ RW ROOTWORM PROTECTION MAIZE |

Pioneer Hi-Bred International Inc. | Resistance to diseases and pests (Insects, Coleoptera (beetles)), Resistance to herbicides (Glufosinate)

### Characteristics of the modification process

#### Vector

PV-ZMAP1043, PV-ZMIR245, PHI8999A and PHP17662

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#### Techniques used for the modification

Cross breeding

#### Genetic elements construct

|                          |                               |                           |
|--------------------------|-------------------------------|---------------------------|
| P-ubi1-MAIZE<br>1.990 kb | CS-cry34Ab1-BACTU<br>0.370 kb | T-pinII-SOLTU<br>0.320 kb |
|--------------------------|-------------------------------|---------------------------|

|                         |                               |                           |
|-------------------------|-------------------------------|---------------------------|
| P-pox-WHEAT<br>1.300 kb | CS-cry35Ab1-BACTU<br>1.150 kb | T-pinII-SOLTU<br>0.320 kb |
|-------------------------|-------------------------------|---------------------------|

|                          |                            |                           |
|--------------------------|----------------------------|---------------------------|
| P-ubi1-MAIZE<br>1.980 kb | CS-cry1F-BACTU<br>1.820 kb | T-orf25-RHIRD<br>0.720 kb |
|--------------------------|----------------------------|---------------------------|

|                        |                          |                        |
|------------------------|--------------------------|------------------------|
| P-35S-CaMV<br>0.550 kb | CS-pat-STRVR<br>0.550 kb | T-35S-CaMV<br>0.200 kb |
|------------------------|--------------------------|------------------------|

|                         |                         |                            |                                |                             |
|-------------------------|-------------------------|----------------------------|--------------------------------|-----------------------------|
| P-e35S-CaMV<br>0.300 kb | L-cab-WHEAT<br>0.060 kb | I-1_act1-ORYSA<br>0.480 kb | CS-cry1A_105-SYNTH<br>3.530 kb | T-hsp17_3-WHEAT<br>0.210 kb |
|-------------------------|-------------------------|----------------------------|--------------------------------|-----------------------------|

|                       |                           |                           |                              |                         |
|-----------------------|---------------------------|---------------------------|------------------------------|-------------------------|
| P-34S-FMV<br>0.560 kb | I-hsp70-MAIZE<br>0.800 kb | TP-rbcS-MAIZE<br>0.400 kb | CS-Cry2Ab2-BACTU<br>1.910 kb | T-nos-RHIRD<br>0.250 kb |
|-----------------------|---------------------------|---------------------------|------------------------------|-------------------------|

P-e35S-CaMV  
0.620 kb

I-hsp70-MAIZE  
0.800 kb

TP-ctp2-ARATH  
0.230 kb

CS-CP4epsps-RHIRD  
1.370 kb

T-nos-RHIRD  
0.250 kb

Introduced or modified genetic element(s)

Some of these genetic elements may be present as fragments or truncated forms. Please see notes below, where applicable.

**BCH-GENE-SCBD-100362-7** UBIQUITIN GENE PROMOTER | (MAIZE, CORN) |

Promoter

**BCH-GENE-SCBD-14994-9** CRY34AB1 | BACILLUS THURINGIENSIS - BT, BACILLUS, BACTU |

Protein coding sequence | Resistance to diseases and pests (Insects, Coleoptera (beetles))

**BCH-GENE-SCBD-100367-4** PROTEINASE INHIBITOR II GENE TERMINATOR | (POTATO) |

Terminator

**BCH-GENE-SCBD-100368-6** PEROXIDASE GENE PROMOTER | (WHEAT) |

Promoter

**BCH-GENE-SCBD-14995-8** CRY35AB1 | BACILLUS THURINGIENSIS - BT, BACILLUS, BACTU |

Protein coding sequence | Resistance to diseases and pests (Insects, Coleoptera (beetles))

**BCH-GENE-SCBD-14987-8** CRY1F | BACILLUS THURINGIENSIS - BT, BACILLUS, BACTU |

Protein coding sequence | Resistance to diseases and pests (Insects, Lepidoptera (butterflies and moths))

**BCH-GENE-SCBD-100363-5** ORF25 POLYA TERMINATOR SEQUENCE |

Terminator

**BCH-GENE-SCBD-100287-7** CAMV 35S PROMOTER |

Promoter

**BCH-GENE-SCBD-15002-4** PHOSPHINOTHRICIN N-ACETYLTRANSFERASE GENE |

Protein coding sequence | Resistance to herbicides (Glufosinate)

**BCH-GENE-SCBD-100290-6** CAMV 35S TERMINATOR |

Terminator

**BCH-GENE-SCBD-100366-6** CAMV ENHANCED 35S PROMOTER |

Promoter

**BCH-GENE-SCBD-100354-6** 5' UNTRANSLATED LEADER FROM CHLOROPHYLL A/B-BINDING PROTEIN | (WHEAT) |

Leader sequence

**BCH-GENE-SCBD-100355-6** RICE ACTIN 1, INTRON | (RICE) |

Intron

**BCH-GENE-SCBD-43771-9** CRY1A.105 | BACILLUS THURINGIENSIS - BT, BACILLUS, BACTU |

Protein coding sequence | Resistance to diseases and pests (Insects, Lepidoptera (butterflies and moths))

**BCH-GENE-SCBD-100356-6** HEAT SHOCK PROTEIN 17.3 TERMINATOR | (WHEAT) |

Terminator

**BCH-GENE-SCBD-101507-5** FMV 34S PROMOTER |

Promoter

**BCH-GENE-SCBD-100359-7** HSP70 INTRON | (MAIZE, CORN) |

Intron

**BCH-GENE-SCBD-100360-4** TRANSIT PEPTIDE AND FIRST INTRON OF RUBISCO SSU | (MAIZE, CORN) |

Transit signal

**BCH-GENE-SCBD-14988-7** CRY2AB2 | BACILLUS THURINGIENSIS - BT, BACILLUS, BACTU |  
Protein coding sequence | Resistance to diseases and pests (Insects, Lepidoptera (butterflies and moths))

**BCH-GENE-SCBD-100269-8** NOPALINE SYNTHASE GENE TERMINATOR |  
Terminator

**BCH-GENE-SCBD-100365-6** CHLOROPLAST TRANSIT PEPTIDE 2 | (THALE CRESS) |  
Transit signal

**BCH-GENE-SCBD-14979-7** 5-ENOLPYRUVYLSHIKIMATE-3-PHOSPHATE SYNTHASE GENE |  
Protein coding sequence | Resistance to herbicides (Glyphosate)

Notes regarding the genetic elements present in this LMO

#### **DNA insert from TC1507 vector PHI8999A**

TC1507 modified with the insertion of the Cry1F gene to confer resistance to the European corn borer (*Ostrinia nubilalis*). A transformation cassette coding for phosphinothricin (PPT) herbicide tolerance, specifically glufosinate ammonium, was also inserted into the organism.

#### **DNA insert from 59122 vector PHP17662**

The cry34Ab1 and cry35Ab1 genes, isolated from the common soil bacterium *Bacillus thuringiensis* (Bt) strain PS149B1, produce the insect control proteins (delta-endotoxins) Cry34Ab1 and Cry35Ab1. The pat gene was isolated from the soil bacterium *Streptomyces viridochromogenes* and confers tolerance to herbicides containing glufosinate ammonium.

#### **DNA insert from MON89034 vector PV-ZMIR245**

Maize line MON89034 expresses two Bt-toxins encoded by the genes cry1A.105 and cry2Ab2 from *Bacillus thuringiensis* that confer resistance against certain lepidopteran pests.

#### **DNA insert from MON87427, vector PV-ZMAP1043**

MON87427 was modified to express the CP4 EPSPS protein which confers tolerance to the herbicide glyphosate. The e35S-hsp70 promoter and intron combination is used to drive the tissue selective expression of the cp4 epsps gene resulting in CP4 EPSPS protein production in vegetative and female reproductive tissue, providing tolerance to glyphosate within these tissues.

For additional information on this LMO, please refer to the records of the parental LMOs.

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## **LMO characteristics**

### Modified traits

Resistance to diseases and pests

Insects

Coleoptera (beetles)

Lepidoptera (butterflies and moths)

Resistance to herbicides

Glufosinate

Glyphosate

Common use(s) of the LMO

Food  
Feed

### Detection method(s)

External link(s)

- ? [MON-87427-7 - EU Reference Laboratory for GM Food and Feed \(EURL-GMFF\)](#) ( *English* )
- ? [MON-89Ø34-3 - EU Reference Laboratory for GM Food and Feed \(EURL-GMFF\)](#) ( *English* )
- ? [DAS-Ø15Ø7-1 - EU Reference Laboratory for GM Food and Feed \(EURL-GMFF\)](#) ( *English* )
- ? [DAS-59122-7 - EU Reference Laboratory for GM Food and Feed \(EURL-GMFF\)](#) ( *English* )

### Additional Information

Other relevant website addresses and/or attached documents

- ? [MON-87427-7 x MON-89Ø34-3 x DAS-Ø15Ø7-1 x DAS-59122-7](#) ( *English* )

[BCH-LMO-SCBD-112724-1](#)

## Further Information

Questions about the Cartagena Protocol on Biosafety or the operation of the Biosafety Clearing-House may be directed to the Secretariat of the Convention on Biological Diversity.

### **Secretariat of the Convention on Biological Diversity**

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