

## Biosafety Clearing-House (BCH)

LIVING MODIFIED ORGANISM (LMO)

BCH-LMO-SCBD-112361-1

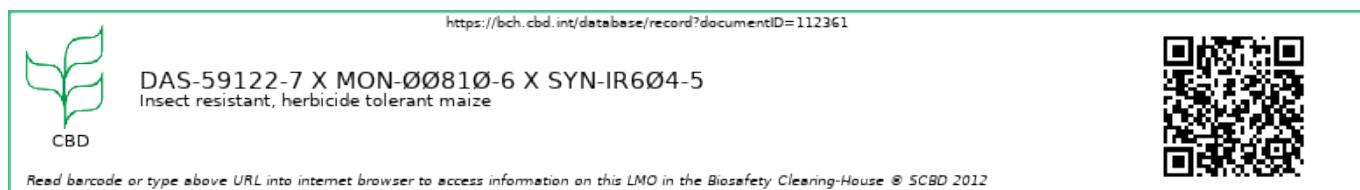
? Decisions on the LMO ? Risk Assessments

LAST UPDATED: 18 AUG 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.



Name

Insect resistant, herbicide tolerant maize

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Transformation event

59122 x MON810 x MIR604

Unique identifier

DAS-59122-7 x MON-ØØ81Ø-6 x SYN-IR6Ø4-5

Developer(s)

- ORGANIZATION: DUPONT POINEER | [BCH-CON-SCBD-106199-2](#)

#### ORGANIZATION

Dupont Pioneer  
Private sector (business and industry)  
Chestnut Run Plaza 720/1S5 974 Centre Road  
Wilmington,, Delaware  
19805, United States of America

Description

The stacked maize line DAS-59122-7 x MON-ØØ81Ø-6 x SYN-IR6Ø4-5 was obtained through the traditional cross breeding of each of the parental organisms to produce a maize that expresses each of pat, cry34Ab1, cry35Ab1, cry1Ab and cry3Aa2 genes. The expression of these genes are expected to confer resistance to Lepidoptera and Coleoptera, and tolerant to glufosinate herbicides.

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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-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)

#### BCH-LMO-SCBD-14750-19 LIVING MODIFIED ORGANISM | MON-ØØ81Ø-6 - YIELDGARD™ MAIZE

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

#### BCH-LMO-SCBD-15105-12 LIVING MODIFIED ORGANISM | SYN-IR6Ø4-5 - AGRISURE™ RW ROOTWORM-PROTECTED MAIZE

Mannose tolerance Resistance to diseases and pests - Insects - Coleoptera (beetles) - Western corn rootworm (*Diabrotica virgifera*) Selectable marker genes and reporter genes

## Characteristics of the modification process

Vector

PHP17662, PV-ZMBK07 and pZM26

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Techniques used for the modification

Cross breeding

Genetic elements construct

P-MTL-MAIZE  
2.560 kb

CS-mCry3A  
1.800 kb

T-nos-RHIRD  
0.250 kb

P-ubi1-MAIZE  
0.980 kb

I-1\_ubi1-MAIZE  
1.010 kb

CS-pmi-ECOLX  
1.180 kb

T-nos-RHIRD  
0.250 kb

P-e35S-CaMV  
0.610 kb

I-hsp70-MAIZE  
0.800 kb

CS-Cry1Ab-BACTU  
3.460 kb

P-35S-CaMV  
0.550 kb

CS-pat-STRVR  
0.550 kb

T-35S-CaMV  
0.200 kb

P-pox-WHEAT  
1.300 kb

CS-cry35Ab1-BACTU  
1.150 kb

T-pinII-SOLTU  
0.320 kb

P-ubi1-MAIZE  
1.990 kb

CS-cry34Ab1-BACTU  
0.370 kb

T-pinII-SOLTU  
0.320 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-103881-2 METALLOTHIONEIN-LIKE GENE PROMOTER | (MAIZE, CORN)**

Promoter

**BCH-GENE-SCBD-43634-3 MCRY3A | BACILLUS THURINGIENSIS - BT, BACILLUS, BACTU**

Protein coding sequence | Resistance to diseases and pests (Insects, Coleoptera (beetles), Western corn rootworm (Diabrotica virgifera))

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

Terminator

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

Promoter

**BCH-GENE-SCBD-103627-5 UBIQUITIN INTRON 1 | (MAIZE, CORN)**

Intron

**BCH-GENE-SCBD-15003-7 PHOSPHOMANNOSE ISOMERASE GENE | (BACTERIA)**

Protein coding sequence | Mannose tolerance, Selectable marker genes and reporter genes

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

Promoter

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

Intron

**BCH-GENE-SCBD-14985-12 CRY1AB | BACILLUS THURINGIENSIS - BT, BACILLUS, BACTU**

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

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

Terminator

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

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

Notes regarding the genetic elements present in this LMO

**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.

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**DNA insert from MON810 vector PV-ZMBK07**

MON810 contains a truncated portion of a synthetic form of the cry1Ab gene which confers

resistance against lepidoptera

### DNA insert from MIR604 vector pZM26

Cry3A gene was modified for enhanced expression in maize and such that the amino acid sequence of the synthetic version of Cry3A is the same as the native protein, except for the modified serine-protease recognition site. The pmi gene encodes the enzyme phosphomannose isomerase (PMI) that allows the plants to utilise mannose as a carbon source and is used as a selectable marker.

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

## LMO characteristics

Modified traits

Resistance to diseases and pests

Insects

Coleoptera (beetles)

Lepidoptera (butterflies and moths)

Resistance to herbicides

Glufosinate

Selectable marker genes and reporter genes

Common use(s) of the LMO

Food

Feed

## Detection method(s)

External link(s)

- ? [DAS-59122-7 - EU Reference Laboratory for GM Food and Feed \(EURL-GMFF\) \( English \)](#)
- ? [MON-ØØ81Ø-6 - EU Reference Laboratory for GM Food and Feed \(EURL-GMFF\) \( English \)](#)
- ? [SYN-IR6Ø4-5 - EU Reference Laboratory for GM Food and Feed \(EURL-GMFF\) \( English \)](#)

## Additional Information

Other relevant website addresses and/or attached documents

- ? [DAS-59122-7 x MON-ØØ81Ø-6 x SYN-IR6Ø4-5 - ISAAA \( English \)](#)

[BCH-LMO-SCBD-112361-1](#)

## 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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