

Biosafety Clearing-House (BCH)

LIVING MODIFIED ORGANISM (LMO)


BCH-LMO-SCBD-108881-1

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

LAST UPDATED: 30 SEP 2015


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.



MON-87411-9
Maize modified for herbicide tolerance and insect resistance

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

<https://bch.cbd.int/database/record?documentID=108881>


Name

Maize modified for herbicide tolerance and insect resistance

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Transformation event

MON 87411

Unique identifier

MON-87411-9

Developer(s)

- [PERSON: MONSANTO](#) | [BCH-CON-NZ-199-1](#)

PERSON

Monsanto

Description

MON-87411-9 maize was modified to contain a suppression cassette that expresses an inverted repeat sequence designed to match the sequence of western corn rootworm (WCR).

The expression of the suppression cassette results in the formation of a double-stranded RNA (dsRNA) transcript containing a 240 bp fragment of the WCR Snf7 gene (DvSnf7). Upon consumption, the plant-produced dsRNA in MON 87411 is recognized by the CRW's RNA interference (RNAi) machinery resulting in down regulation of the targeted DvSnf7 gene leading to CRW mortality.

MON 87411 also contains a cry3Bb1 gene that produces a modified *Bacillus thuringiensis*

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(subsp. kumamotoensis) Cry3Bb1 protein to protect against CRW larval feeding.

In addition, MON 87411 contains the cp4 epsps gene from Agrobacterium sp. strain CP4 that encodes for the 5-enolpyruvylshikimate-3-phosphate synthase (EPSPS) protein, which confers tolerance to glyphosate

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

Characteristics of the modification process

Vector

PV-ZMIR10871

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Techniques used for the modification

Agrobacterium-mediated DNA transfer

Genetic elements construct

P-e35S-CaMV 0.620 kb	I-hsp70-MAIZE 0.800 kb	CS-Snf7_RNAi_u-DIAVI 0.239 kb	CS-Snf7_RNAi_u-DIA 0.239 kb	T-rbcS_E9-PEA 0.632 kb
P-pIIG-MAIZE 0.948 kb	L-cab-WHEAT 0.060 kb	I-1_act1-ORYSA 0.479 kb	CS-Cry3Bb1-BACTU 1.961 kb	T-hsp17_3-WHEAT 0.209 kb
P-TubA-ORYSA 2.180 kb	TP-ctp2-ARATH 0.227 kb	CS-CP4epsps-RHIRD 1.367 kb	T-TubA-ORYSA 0.581 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-108875-2](#) SNF7 CODING SEQUENCE | (WESTERN CORN ROOTWORM) |

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

[BCH-GENE-SCBD-14979-7](#) 5-ENOLPYRUVYLSHIKIMATE-3-PHOSPHATE SYNTHASE GENE |

Protein coding sequence | Resistance to herbicides (Glyphosate)

[BCH-GENE-SCBD-14993-5](#) CRY3BB1 | BACILLUS THURINGIENSIS - BT, BACILLUS, BACTU |

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

[BCH-GENE-SCBD-100366-6](#) CAMV ENHANCED 35S PROMOTER |

Promoter

[BCH-GENE-SCBD-100359-7](#) HSP70 INTRON | (MAIZE, CORN) |

Intron

BCH-GENE-SCBD-101877-5 RBCS-E9 GENE TERMINATOR | (GARDEN PEA) |

Terminator

BCH-GENE-SCBD-108876-1 PIIG GENE PROMOTER | (MAIZE, CORN) |

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-100356-6 HEAT SHOCK PROTEIN 17.3 TERMINATOR | (WHEAT) |

Terminator

BCH-GENE-SCBD-108877-1 ALPHA TUBULIN GENE PROMOTER | (RICE) |

Promoter

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

Transit signal

BCH-GENE-SCBD-108880-1 ALPHA TUBULIN GENE TERMINATOR | (RICE) |

Terminator

Notes regarding the genetic elements present in this LMO

The DvSnf7p sequence is the partial coding sequence of the Snf7 gene from *Diabrotica virgifera virgifera* encoding the SNF7 subunit of the ESCRT-III complex. The DvSnf7 suppression cassette contains two 240 bp DvSnf7p sequences in an inverted orientation. There is an intervening sequence of 150 nucleotides between the two DvSnf7p sequences. When the suppression cassette is transcribed, the RNA expressed forms a hairpin loop thereby allowing the formation of double stranded DvSnf7 RNA. The DvSnf7p sequences in the suppression cassette produce a 240 bp dsRNA that upon transcription triggers the RNAi mechanism.

Sequencing, PCR, and bioinformatic analysis indicated that a single, intact insert of the DvSnf7 suppression cassette and the cry3Bb1 and cp4 epsps expression cassettes were stably integrated into the maize genome. Analyses also indicated the absence of the plasmid backbone DNA in MON 87411 maize.

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LMO characteristics

Modified traits

Resistance to diseases and pests

Insects

Coleoptera (beetles)

Western corn rootworm (*Diabrotica virgifera*)

Northern corn rootworm (*Diabrotica barberi*)

Resistance to herbicides

Glyphosate

Additional Information

Other relevant website addresses and/or attached documents

- ? [MON 87411 - APHIS](#) (*English*)
- ? [MON-87411-9 - ISAAA](#) (*English*)
- ? [MON-87411-9 - GMO Compass](#) (*English*)
- ? [Control of coleopteran insect pests through RNA interference](#) (*English*)
- ? [An endosome-associated heterooligomeric protein complex required for mvb sorting](#) (*English*)

[BCH-LMO-SCBD-108881-1](#)

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.

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on Biological Diversity**

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