

Biosafety Clearing-House (BCH)

LIVING MODIFIED ORGANISM (LMO)

BCH-LMO-SCBD-104680-5

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

LAST UPDATED: 24 JUL 2013

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.



CBD

<https://bch.cbd.int/database/record?documentID=104680>

MON-87460-4 X MON-89034-3 X MON-00603-6
Maize Modified for drought and glyphosate tolerance and resistance to Lepidoptera



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

Name

Maize Modified for drought and glyphosate tolerance and resistance to Lepidoptera

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Transformation event

MON87460 x MON89034 x NK603

Unique identifier

MON-87460-4 x MON-89034-3 x MON-00603-6

Developer(s)

- [ORGANIZATION: MONSANTO JAPAN LIMITED](#) | [BCH-CON-SCBD-8265-1](#)

ORGANIZATION

Monsanto Japan Limited
Ginza Sanno Bldg. 8F 4-10-10, Ginza
Chuo-ku, Tokyo
104-0061, Japan
Website: <http://www.monsanto.co.jp/>

Description

This stacked maize line contains genetic elements that were inherited via the traditional cross breeding of the parental lines MON87460, MON89034 and NK603. This line expresses the cspB, cry1A.105 and cry2Ab2 proteins. These proteins are to confer drought and glyphosate tolerance and resistance to Lepidoptera.

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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-43773-18](#) LIVING MODIFIED ORGANISM | MON-89Ø34-3 - YIELDGARD™ VT PRO™ |

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

[BCH-LMO-SCBD-14776-17](#) LIVING MODIFIED ORGANISM | MON-ØØ6Ø3-6 - ROUNDUP READY™ MAIZE |

Resistance to herbicides - Glyphosate

[BCH-LMO-SCBD-103066-6](#) LIVING MODIFIED ORGANISM | MON-8746Ø-4 - DROUGHTGARD™ MAIZE |

Resistance to antibiotics - Kanamycin Tolerance to abiotic stress - Cold / Heat, Drought

Related LMO(s)

[BCH-LMO-SCBD-46305-16](#) | MON-89Ø34-3 x MON-ØØ6Ø3-6 - Genuity® VT Double Pro™ Maize |
Monsanto Europe S.A. | Resistance to antibiotics (Kanamycin), Resistance to diseases and pests
(Insects, Lepidoptera (butterflies and moths)), Resistance to herbicides (Glyphosate)

[Show detection method\(s\)](#)

Characteristics of the modification process

Vector

PV-ZMAP595, PV-ZMIR245 and PV-ZMGT32

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Techniques used for the modification

Cross breeding

Genetic elements construct

P-e35S-CaMV 0.300 kb	L-cab-WHEAT 0.060 kb	I-1_act1-ORYSA 0.480 kb	CS-cry1A_105-SYNTH 3.530 kb	T-hsp17_3-WHEAT 0.210 kb
P-34S-FMV 0.560 kb	I-hsp70-MAIZE 0.800 kb	TP-rbcS-MAIZE 0.400 kb	CS-Cry2Ab2-BACTU 1.910 kb	T-nos-RHIRD 0.250 kb
P-act1-ORYSA 0.800 kb	I-1_act1-ORYSA 0.600 kb	TP-ctp2-ARATH 0.200 kb	CS-CP4epsps-RHIRD 1.400 kb	T-nos-RHIRD 0.300 kb
P-e35S-CaMV 0.600 kb	I-hsp70-MAIZE 0.800 kb	TP-ctp2-ARATH 0.200 kb	CS-CP4epsps-RHIRD 1.400 kb	T-nos-RHIRD 0.300 kb
P-act1-ORYSA 0.920 kb	I-1_act1-ORYSA 0.480 kb	CS-cspB-BACIU 0.200 kb	T-tr7-RHIRD 0.510 kb	V-loxP 0.033 kb
P-35S-CaMV 0.290 kb	CS-nptII-ECOLX 0.790 kb	T-nos-RHIRD 0.250 kb	V-loxP 0.033 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-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-100287-7 CAMV 35S PROMOTER |

Promoter

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

Intron

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

Terminator

BCH-GENE-SCBD-15001-5 NEOMYCIN PHOSPHOTRANSFERASE II | (BACTERIA) |

Protein coding sequence | Resistance to antibiotics (Kanamycin)

BCH-GENE-SCBD-100364-5 RICE ACTIN 1 GENE PROMOTER | (RICE) |

Promoter

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)

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-103065-7 COLD SHOCK PROTEIN GENE |

Protein coding sequence | Tolerance to abiotic stress (Cold / Heat, Drought)

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

Promoter

BCH-GENE-SCBD-103067-9 TRANSCRIPT 7 GENE 3' UNTRANSLATED REGION |

Terminator

BCH-GENE-SCBD-103069-3 LOXP RECOMBINATION SITE |

recombination site

Notes regarding the genetic elements present in this LMO

DNA insert from MON87460 vector PV-ZMAP595

MON 87460 expresses cold shock protein B (CspB) from Bacillus subtilis and NptII from Tn5 of Escherichia coli. It was developed to provide reduced yield loss under water-limited conditions compared to conventional maize.

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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 such as fall armyworm (*Spodoptera* sp.), black cutworm (*Agrotis ipsilon*), european corn borer (*Ostrinia nubilalis*) and the corn earworm (*Helicoverpa zea*).

DNA insert from NK603 vector PV-ZMGT32

NK603 contains a form of the plant enzyme 5-enolpyruvylshikimate-3-phosphate synthase (EPSPS) that allows the plant to survive the otherwise lethal application of glyphosate.

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

Lepidoptera (butterflies and moths)

Resistance to herbicides

Glyphosate

Resistance to antibiotics

Kanamycin

Tolerance to abiotic stress

Cold / Heat

Drought

Common use(s) of the LMO

Food

Feed

Detection method(s)

External link(s)

? [Event-specific Method for the Quantification of Maize MON87460 Using Real-time PCR](#) (*English*)

? [MON-89034-3 - EU Reference Laboratory for GM Food and Feed \(EURL-GMFF\)](#) (*English*)

? [MON-00603-6 - EU Reference Laboratory for GM Food and Feed \(EURL-GMFF\)](#) (*English*)

Additional Information

Other relevant website addresses and/or attached documents

? [MON87460 × MON89034 × NK603 \(Japanese\)](#) (*English*)

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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