

Biosafety Clearing-House (BCH)

LIVING MODIFIED ORGANISM (LMO)

BCH-LMO-SCBD-108887-4

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

LAST UPDATED: 26 MAY 2022

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=108887>

MON-15985-7 × MON-88701-3 × MON-88913-8
Insect resistant, Herbicide tolerant Cotton



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 Cotton

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Transformation event

MON15985 × MON88701 × MON88913

Unique identifier

MON-15985-7 × MON-88701-3 × MON-88913-8

Developer(s)

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

ORGANIZATION

Monsanto
800 North Lindbergh Blvd.
St. Louis, MO
63167, United States of America
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Website: <http://www.monsanto.com>

Description

The stacked cotton line MON88701 × MON88913 × MON15985 expresses several novel proteins: the delta-endotoxins the Cry1Ac and Cry2Ab which confer resistance to lepidopteran pests, EPSPS (5-enolpyruvylshikimate-3-phosphate synthase) that confers tolerance to the herbicide glyphosate, as well as Dicamba monooxygenase gene that confers

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tolerance to the herbicide dicamba and Phosphinothricin N-acetyltransferase gene that confers tolerance to the herbicide glufosate.

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-LMO-SCBD-105602-2 LIVING MODIFIED ORGANISM | MON-887Ø1-3 - DICAMBA AND GLUFOSINATE TOLERANT COTTON |

Resistance to herbicides - Glufosinate

BCH-LMO-SCBD-15168-16 LIVING MODIFIED ORGANISM | MON-88913-8 - ROUNDUP READY™ FLEX™ COTTON |

Resistance to herbicides - Glyphosate

BCH-LMO-SCBD-14774-18 LIVING MODIFIED ORGANISM | MON-15985-7 - BOLLGARD II™ COTTON |

Resistance to antibiotics - Kanamycin, Streptomycin Resistance to diseases and pests - Insects - Lepidoptera (butterflies and moths) Selectable marker genes and reporter genes

BCH-ORGA-SCBD-12080-6 ORGANISM | GOSSYPIMUM HIRSUTUM (COTTON) |

Crops

Related LMO(s)

BCH-LMO-SCBD-15215-11 | MON-88913-8 x MON-15985-7 - Roundup Ready™ Flex™ Bollgard II™ cotton | Resistance to antibiotics - Kanamycin, Streptomycin Resistance to diseases and pests - Insects - Lepidoptera (butterflies and moths) Resistance to herbicides - Glyphosate Selectable marker genes and reporter genes

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

Characteristics of the modification process

Vector

PV-GHHT6997, PV-GHGT35, PV-GHBK04 and PV-GHBK11

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Techniques used for the modification

Cross breeding

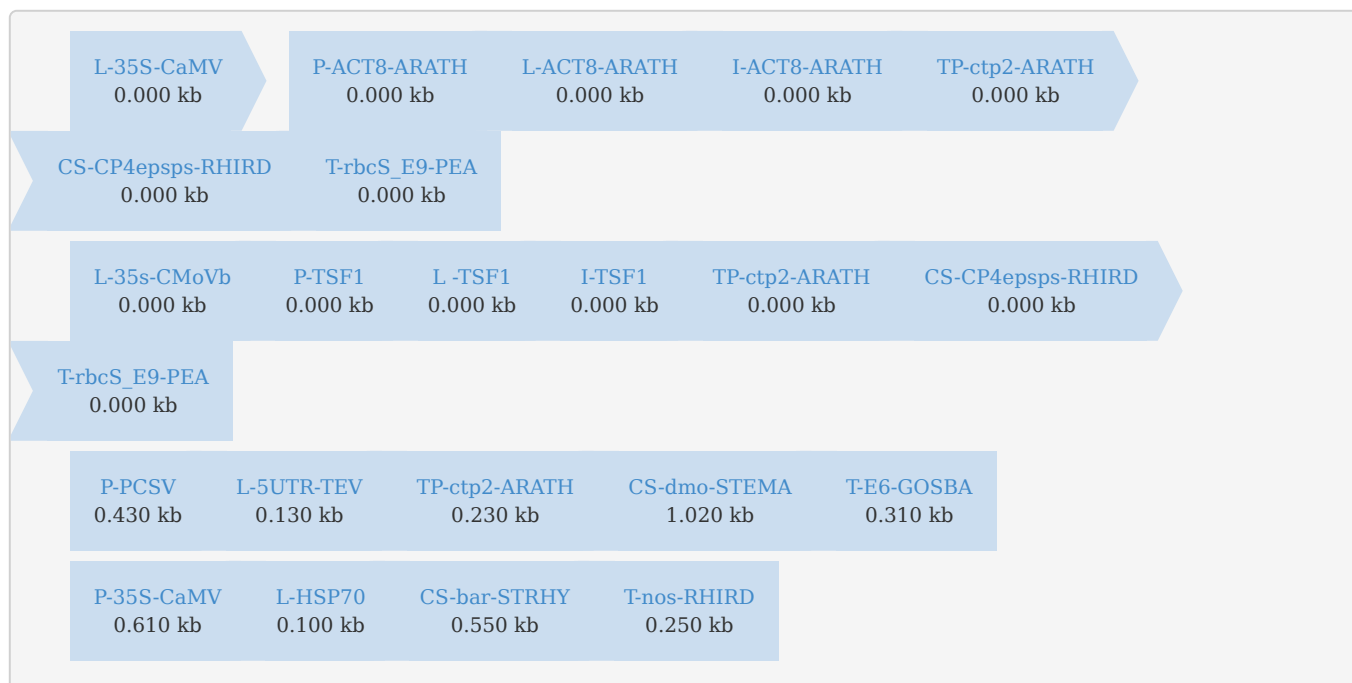
Genetic elements construct

P-e35S-CaMV 0.000 kb	CS-uidA-ECOLX 0.000 kb	T-nos-RHIRD 0.000 kb
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P-e35S-CaMV 0.000 kb	CS-nptII-ECOLX 0.000 kb	T-nos-RHIRD 0.000 kb
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P-e35S-CaMV 0.000 kb	CS-cry1Ac-BACTU 0.000 kb	T-7Salpha-SOYBN 0.000 kb
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P-e35S-CaMV 0.000 kb	L-HSP70 0.000 kb	TP-ctp2-ARATH 0.000 kb	CS-Cry2Ab2-BACTU 0.000 kb	T-nos-RHIRD 0.000 kb
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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-46004-7 BETA-GLUCURONIDASE CODING SEQUENCE | (BACTERIA) |

Protein coding sequence | Selectable marker genes and reporter genes

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-14986-6 CRY1AC | BACILLUS THURINGIENSIS - BT, BACILLUS, BACTU |

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

BCH-GENE-SCBD-103856-6 A' SUBUNIT OF B-CONGLYCININ GENE TERMINATOR | (SOYBEANS) |

Terminator

BCH-GENE-SCBD-103901-2 HSP 70 5' UNTRANSLATED LEADER SEQUENCE | (PETUNIA) |

Leader

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

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-105197-2 CAMV 35S ENHANCER |

Leader

BCH-GENE-SCBD-103907-2 ACTIN 8 PROMOTER | (THALE CRESS) |

Promoter

BCH-GENE-SCBD-103908-3 ACTIN 8 LEADER SEQUENCE | (THALE CRESS) |

Leader Sequence

BCH-GENE-SCBD-103909-2 ACTIN 8 INTRON 1 | (THALE CRESS) |

Intron

BCH-GENE-SCBD-14979-7 5-ENOLPYRUVYLSHIKIMATE-3-PHOSPHATE SYNTHASE GENE |

Protein coding sequence | Resistance to herbicides (Glyphosate)

BCH-GENE-SCBD-105196-2 FMV 35S ENHANCER |

Leader

BCH-GENE-SCBD-103903-1 ELONGATION FACTOR EF-1ALPHA PROMOTER | (THALE CRESS) |

Promoter

BCH-GENE-SCBD-103904-1 ELONGATION FACTOR EF-1ALPHA LEADER | (THALE CRESS) |

Leader

BCH-GENE-SCBD-103905-1 ELONGATION FACTOR EF-1ALPHA INTRON 1 | (THALE CRESS) |

Intron

BCH-GENE-SCBD-104662-3 PCSV PROMOTER | PEANUT CHLOROTIC STREAK VIRUS (PCSV, PCLSV) |

Promoter

BCH-GENE-SCBD-104664-2 TEV 5' UNTRANSLATED REGION | (TEV) |

Leader

BCH-GENE-SCBD-100728-3 DICAMBA MONOOXYGENASE GENE | STENOTROPHOMONAS MALTOPHILIA (S. MALTOPHILIA, STENOTROPHOMONAS) |

Protein coding sequence | Resistance to herbicides

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

Promoter

BCH-GENE-SCBD-14972-12 PHOSPHINOTHRICIN N-ACETYLTRANSFERASE GENE |

Protein coding sequence | Resistance to herbicides (Glufosinate)

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

Terminator

BCH-GENE-SCBD-105600-1 E6 GENE TERMINATOR | (SEA-ISLAND COTTON, EGYPTIAN COTTON) |

Terminator

Notes regarding the genetic elements present in this LMO

A stacked insect-resistant and herbicide-tolerant cotton derived by crossing MON-88913-8 with MON-15985-7 and MON-887Ø1-3, includes the cry1Ac gene and the cry2Ab gene from *Bacillus thuringiensis* subsp. *kurstaki* conferring resistance to lepidopteran pests, and the epsps gene encoding 5-enolpyruvylshikimate-3-phosphate synthase that confers tolerance to the herbicide glyphosate as well as Dicamba monooxygenase gene that confers tolerance to the herbicide dicamba and Phosphinothricin N-acetyltransferase gene that confers tolerance to the herbicide glufosate. The neomycin phosphotransferase II (npt II) gene confers resistance to the antibiotic kanamycin and was used as a selectable marker.

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DNA insert from MON 88913 vector PV-GHGT35

Roundup Ready® Flex cotton (MON 88913) was developed to allow the use of glyphosate, the active ingredient in the herbicide Roundup®, as a weed control option in cotton production. This genetically engineered cotton contains a novel form of the plant enzyme 5-enolpyruvylshikimate-3-phosphate synthase (EPSPS) that allows MON 88913 to survive otherwise lethal applications of glyphosate. The EPSPS gene introduced into MON 88913 was

isolated from a strain of the common soil bacterium *Agrobacterium tumefaciens* strain CP4; the EPSPS enzyme expressed by this gene is tolerant to glyphosate. MON 88913 cotton contains two copies of the EPSPS gene to confer tolerance to glyphosate later in the growing season, specifically after the fifth true leaf stage.

DNA insert from MON15985 vector PV-GHBK11 and PV-GHBK04

Event 15985 (tradename Bollgard II®) was derived from the retransformation of transgenic cotton line MON 531. As a result of these two transformation events, MON15985 contains the cry1Ac gene and the cry2Ab conferring resistance to lepidopteran pests as well as copies of the nptII and uidA and aadA genes.

DNA insert from MON88701 vector PV-GHHT6997

Cotton modified with the insertion of transformation cassette containing the Dicamba monooxygenase (DMO) gene and Bialaphos resistance (BAR) gene to confer resistance to the herbicides Dicamba and Glufosinate respectively.

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

- Glufosinate
- Glyphosate

Resistance to antibiotics

- Kanamycin
- Streptomycin

Other

- Resistance to Dicamba

Common use(s) of the LMO

Feed
Food

Detection method(s)

External link(s)

? [MON-88913-8 - EU Reference Laboratory for GM Food and Feed \(EURL-GMFF\)](#) (English)
? [MON-15985-7 - EU Reference Laboratory for GM Food and Feed \(EURL-GMFF\)](#) (English)

Additional Information

Other relevant website addresses and/or attached documents

? [MON88701 x MON88913 x MON15985 - ISAAA](#) (*English*)

[BCH-LMO-SCBD-108887-4](#)

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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