## LIVING MODIFIED ORGANISM (LMO)

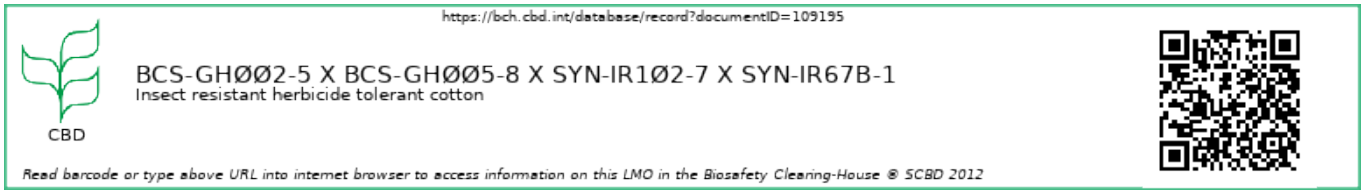
BCH-LMO-SCBD-109195-1

? Decisions on the LMO ? Risk Assessments

LAST UPDATED: 05 NOV 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.




Name

Insect resistant herbicide tolerant cotton | EN

Transformation event

GHB614 x GHB119 x COT102 x COT67B

Unique identifier

BCS-GHØØ2-5 x BCS-GHØØ5-8 x SYN-IR1Ø2-7 x SYN-IR67B-1

Developer(s)

- ORGANIZATION: BAYER CROPSCIENCE | BCH-CON-SCBD-7088-7

**ORGANIZATION**

Bayer CropScience
Website: http://www.bayercropscience.com

- ORGANIZATION: SYNGENTA SEEDS GMBH | BCH-CON-SCBD-101875-3

**ORGANIZATION**

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Description

BCS-GHØØ2-5 x BCS-GHØØ5-8 x SYN-IR1Ø2-7 x SYN-IR67B-1 cotton is the product of the conventional breeding of each of the parental organisms to produce cotton that expresses each of Vip3a, Cry2Ae, Cry1Ab, PAT, EPSPS, and hpt. The expression of these genes are expected to confer resistance to Lepidoptera and tolerance to glufosinate herbicide and glyphosate herbicide as well as resistance to the antibiotic hygromycin B. EN

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-12080-6 ORGANISM | GOSSYPIUM HIRSUTUM (COTTON)
Crops

BCH-LMO-SCBD-46334-8 LIVING MODIFIED ORGANISM | BCS-GHØØ2-5 - GLYTOL™ COTTON GHB614
Bayer CropScience | Resistance to herbicides (Glyphosate)

BCH-LMO-SCBD-47352-6 LIVING MODIFIED ORGANISM | SYN-IR67B-1 - INSECT-RESISTANT COTTON
Resistance to antibiotics - Hygromycin Resistance to diseases and pests - Insects - Lepidoptera (butterflies and moths)
Selectable marker genes and reporter genes

BCH-LMO-SCBD-101898-5 LIVING MODIFIED ORGANISM | BCS-GHØØ5-8 - HERBICIDE-TOLERANT AND LEPIDOPTERA-RESISTANT COTTON
Bayer BioScience N.V. | Changes in quality and/or metabolite content (Pigmentation / Coloration), Resistance to diseases and pests (Insects, Lepidoptera (butterflies and moths), Cotton bollworm (Helicoverpa spp.), Fall armyworm (Spodoptera frugiperda)), Resistance to herbicides (Glufosinate)

BCH-LMO-SCBD-14992-8 LIVING MODIFIED ORGANISM | SYN-IR1Ø2-7 - VIPCOT™ COTTON
Resistance to antibiotics - Hygromycin Resistance to diseases and pests - Insects - Lepidoptera (butterflies and moths)
Selectable marker genes and reporter genes

## Characteristics of the modification process

Vector

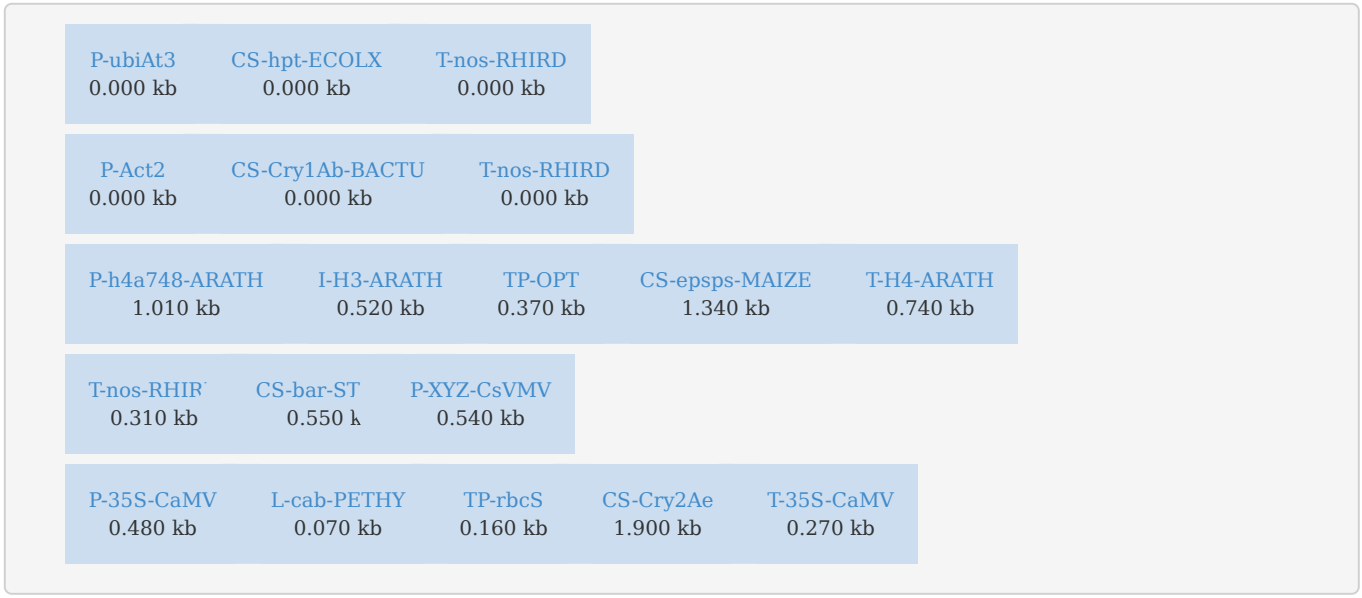
pTEM2, pCOT-1, pTEM12, pNOV4641 and pNOV1914 EN

Techniques used for the modification

Cross breeding

Genetic elements construct

| P-Act2 | CS-Vip3A-BACTU | T-nos-RHIRD |
|---|---|---|
| 0.000 kb | 0.000 kb | 0.000 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-104517-1 ACTIN 2 GENE PROMOTER | (THALE CRESS)

Promoter

BCH-GENE-SCBD-14990-5 VEGETATIVE INSECTICIDAL PROTEIN 3A | 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-101874-2 UBIQUITIN GENE 3 PROMOTER | (THALE CRESS)

Promoter

BCH-GENE-SCBD-14991-8 HYGROMYCIN B PHOSPHOTRANSFERASE GENE | (BACTERIA)

Protein coding sequence | Resistance to antibiotics (Hygromycin),Selectable marker genes and reporter genes

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-104647-3 HISTONE H4 GENE PROMOTER | (THALE CRESS)

Promoter

BCH-GENE-SCBD-104648-2 HISTONE H3 GENE II INTRON 1 | (THALE CRESS)

Intron

BCH-GENE-SCBD-101419-4 OPTIMIZED TRANSIT PEPTIDE

Transit signal

BCH-GENE-SCBD-46333-8 5-ENOLPYRUVYLSHIKIMATE-3-PHOSPHATE SYNTHASE | (MAIZE, CORN)

Protein coding sequence | Resistance to herbicides (Glyphosate)

BCH-GENE-SCBD-104646-4 HISTONE H4 GENE 3' UTR | (THALE CRESS)

Terminator

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

Protein coding sequence | Resistance to herbicides (Glufosinate)

BCH-GENE-SCBD-101900-5 CSVMV PROMOTER

Promoter

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

Promoter

BCH-GENE-SCBD-101901-3 5' UNTRANSLATED LEADER OF CHLOROPHYLL A/B-BINDING PROTEIN | (PETUNIA)

Leader

BCH-GENE-SCBD-101902-4 RBCS TRANSIT PEPTIDE | (THALE CRESS)

Transit signal

BCH-GENE-SCBD-101895-8 CRY2AE

Protein coding sequence | Resistance to diseases and pests (Insects, Lepidoptera (butterflies and moths), Cotton bollworm (Helicoverpa spp.), Fall armyworm (Spodoptera frugiperda))

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

Terminator

Notes regarding the genetic elements present in this LMO

| | |
|---|---|
| **DNA insert from COT102 vector pCOT-1:**<br>Cotton tolerant to lepidopteran pests through introduction of the vip3A(a) gene which codes for an insecticidal protein that targets lepidopteran insect species. The aph4 gene, coding for hygromycin-B phosphotransferase (APH4) was used as a selectable marker.<br><br>**DNA insert from GHB614 vector pTEM2**<br>Contains a single copy of the 2mepsps gene and regulatory elements which confers tolerance to the herbicide glyphosate<br><br>**DNA insert from GHB119 vector pTEM12**<br>Contains one full copy of the Cry2Ae gene which expressed an insecticidal crystal protein that protects against lepidopteran pests and the bar gene which confers tolerance to the herbicide glufosinate.<br><br>**DNA insert from COT67B vector pNOV4641 and pNOV1914:**<br>Cotton resistant to lepidopteran pests through introduction of the cry1Ab gene, in the pNOV4641 vector, which codes for the Cry1Ab insecticidal protein that targets lepidopteran insect species. The pNOV1914 vector contained a selection marker and was selected against using traditional plant breeding techniques.<br><br>For additional information on this LMO, please refer to the records of the parental LMOs. | EN |

## LMO characteristics

Modified traits

Resistance to diseases and pests

Insects

Lepidoptera (butterflies and moths)

Resistance to herbicides

Glufosinate

Glyphosate

Selectable marker genes and reporter genes

Common use(s) of the LMO

Food
Feed
Fiber/textile

BCH-LMO-SCBD-109195-1

## 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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