

## Biosafety Clearing-House (BCH)

LIVING MODIFIED ORGANISM (LMO)


BCH-LMO-SCBD-116284-2

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

LAST UPDATED: 27 SEP 2021


### 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.



ACS-BN005-8 x MON-00073-7  
Male-sterile, Herbicide-tolerant canola

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=116284>


Name

Male-sterile, Herbicide-tolerant canola

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Transformation event

MS8 x RT73

Unique identifier

ACS-BN005-8 x MON-00073-7

Developer(s)

- [PERSON: BAYER CROPSCIENCE](#) | [BCH-CON-SCBD-111462-3](#)

#### PERSON

Bayer CropScience

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Website: <https://www.cropsscience.bayer.com/en>, <https://www.cropsscience.bayer.de/de-DE>

#### RELATED ORGANIZATION

Description

The modified canola (*Brassica napus*) was produced through cross breeding of previously modified parental lines for male sterility and herbicide tolerance. The male tissue specific expression of *Streptomyces hygroscopicus* barnase, disrupts pollen development and results

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in male sterility. For herbicide tolerance, the modified canola expresses *Streptomyces hygroscopicus* phosphinothricin acetyltransferase (glufosinate tolerance), *Agrobacterium tumefaciens* 5-enolpyruvylshikimate-3-phosphate synthase (glyphosate tolerance) and *Ochrobactrum anthropi* glyphosate oxidoreductase (glyphosate tolerance).

#### 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-12083-7** ORGANISM | BRASSICA NAPUS (TURNIP, RAPESEED, CANOLA PLANT, OILSEED RAPE, RAPE, BRANA) |

Crops

**BCH-LMO-SCBD-14759-8** LIVING MODIFIED ORGANISM | ACS-BNØØ5-8 - INVIGOR™ CANOLA |

Changes in physiology and/or production - Reproduction - Male sterility Resistance to herbicides - Glufosinate

**BCH-LMO-SCBD-14795-11** LIVING MODIFIED ORGANISM | MON-ØØØ73-7 - ROUNDUP READY™ CANOLA |

Resistance to herbicides - Glyphosate

### Characteristics of the modification process

#### Vector

pTHW107; PV-BNGT04

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#### Techniques used for the modification

Cross breeding

#### Genetic elements construct

<b>P-ta29-TOBAC</b> 1.510 kb	<b>CS-barnase-BACAM</b> 0.340 kb	<b>T-Barnase3UTR-BACAS</b> 0.110 kb	<b>T-nos-RHIRD</b> 0.260 kb
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<b>P-rbcS-ARATH</b> 1.730 kb	<b>CS-bar-STRHY</b> 0.550 kb	<b>T-tr7-RHIRD</b> 0.210 kb
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<b>P-34S-FMV</b> 0.000 kb	<b>TP-ctp2-ARATH</b> 0.000 kb	<b>CS-CP4epsps-RHIRD</b> 0.000 kb	<b>T-rbcS_E9-PEA</b> 0.000 kb
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<b>P-34S-FMV</b> 0.000 kb	<b>TP-rbcS</b> 0.000 kb	<b>CS-gox-OCHAN</b> 0.000 kb	<b>T-rbcS_E9-PEA</b> 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-101407-6** PTA29 POLLEN SPECIFIC PROMOTER | (TOBACCO PLANT) |

Promoter

**BCH-GENE-SCBD-14973-6** BARNASE |

Protein coding sequence | Changes in physiology and/or production (Reproduction, Male sterility)

**BCH-GENE-SCBD-104825-2** BARNASE 3' UNTRANSLATED REGION |

Terminator

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

Terminator

**BCH-GENE-SCBD-103851-5** RBCS PROMOTER | (THALE CRESS) |

Promoter

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

Protein coding sequence | Resistance to herbicides (Glufosinate)

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

Terminator

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

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

Terminator

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

Transit signal

**BCH-GENE-SCBD-14998-4** GLYPHOSATE OXIDOREDUCTASE GENE |

Protein coding sequence | Resistance to herbicides (Glyphosate)

Notes regarding the genetic elements present in this LMO

#### **DNA insert from pTHW107 from MS8 (ACS-BN005-8) canola**

The DNA insert contains two cassettes: *Bacillus amyloliquefaciens* barnase and *Streptomyces hygroscopicus* phosphinothricin N-acetyltransferase (*bar*).

Barnase is under control of a *Nicotiana tabacum* TA29 pollen specific promoter and an *Agrobacterium tumefaciens* nopaline synthase terminator. An additional sequence, *B. amyloliquefaciens* barnase 3' untranslated region, which contributes to the polyadenylation of the coding sequence, can be found between the barnase coding sequence and nopaline synthase terminator.

Phosphinothricin N-acetyltransferase is under control of an *Arabidopsis thaliana* ribulose-1,5-bisphosphate carboxylase (Rubisco) small subunit promoter and *A. tumefaciens* transcript 7 3' untranslated region.

#### Note:

- The coding sequence of *bar* has the two N-terminal codons modified to ATG and GAC.
- Southern blot and PCR analysis indicated that a single intact copy of the transformation cassette was integrated into the parental genome.

#### **DNA insert from PV-BNGT04 from RT73 (MON-00073-7) canola**

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The DNA insert contains two gene cassettes: *Agrobacterium tumefaciens* 5-enolpyruvylshikimate-3-phosphate synthase (*cp4-epsps*) and *Ochrobactrum anthropi* glyphosate oxidoreductase (*gox*).

The *cp4-epsps* coding sequence is under control of a *Figwort mosaic virus* 34S promoter and a *Pisum sativum* rubisco small subunit terminator. A transit peptide from ribulose-1,5-bisphosphate carboxylase (Rubisco) small subunit was included before the *cp4-epsps* coding sequence. The transit peptide leads to high-level of expression in leaf tissues.

Note:

- The size of the genetic elements were not available at time of this record's creation
- The *gox* coding sequence differs from the wild-type version of the gene at 3 amino acid sites (G85S, R153K and R334H) and was designated as goxv247.
- The *cp4-epsps* sequence was optimized for expression in plants.
- PCR and southern blot analyses indicated that the parental genome contains a single insertion event containing one copy of the T-DNA from plasmid PV-BNGT04. No genetic elements from outside of the right and left borders of the plasmid were transferred into or are present in the genomic DNA of the LMO.

*For more information, kindly refer to the parental LMO records.*

## LMO characteristics

### Modified traits

Resistance to herbicides  
    Glufosinate  
    Glyphosate  
Resistance to antibiotics  
    Kanamycin  
Changes in physiology and/or production  
    Reproduction  
        Male sterility

### Common use(s) of the LMO

Food  
Feed

## Detection method(s)

### External link(s)

- ? [GMO Detection method Database - RT73 \(GT73\) canola \( English \)](#)
- ? [GMO Detection method Database - MS8 canola \( English \)](#)
- ? [ACS-BN005-8 - EU Reference Laboratory for GM Food and Feed \(EURL-GMFF\) \( English \)](#)

- ? [MON-ØØØ73-7 - EU Reference Laboratory for GM Food and Feed \(EURL-GMFF\)](#) ( *English* )
- ? [Croplife Detection Methods - Genuity® Roundup Ready® canola](#) ( *English* )

### Additional Information

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Other relevant website addresses and/or attached documents

- ? [EUginus - MS8 x GT73](#) ( *English* )

[BCH-LMO-SCBD-116284-2](#)

## 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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