LIVING MODIFIED ORGANISM (LMO)

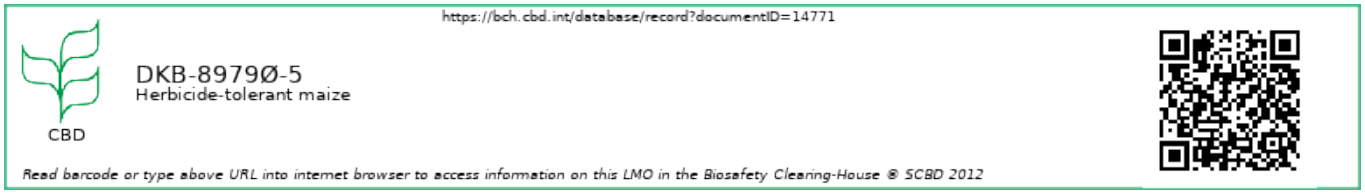
BCH-LMO-SCBD-14771-7

? Decisions on the LMO ? Risk Assessments

LAST UPDATED: 15 MAY 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.



Name

Herbicide-tolerant maize | EN

Transformation event

DLL25 (B16)

Unique identifier

DKB-8979Ø-5

Developer(s)

- ORGANIZATION: MONSANTO (DEKALB) | BCH-CON-SCBD-4950-2

ORGANIZATION

Monsanto (DeKalb)
Website: http://www.monsanto.com

Description

Glufosinate ammonium herbicide tolerant maize produced by inserting the phosphinothricin acetyltransferase (bar) gene from Streptomyces hygroscopicus to confer tolerance to the herbicide phosphinothricin (Glufosinate ammonium). | 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-246-6 ORGANISM | ZEA MAYS (MAIZE, CORN, MAIZE)

Crops

Point of collection or acquisition of the recipient organism or parental organisms

Zea mays hybrid A188 x B73 EN

Characteristics of the modification process

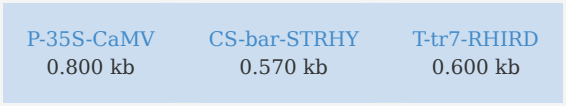
Vector

pDPG165 EN

Techniques used for the modification

Biolistic / Particle gun

Genetic elements construct



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-14972-12 PHOSPHINOTHRICIN N-ACETYLTRANSFERASE GENE

Protein coding sequence | Resistance to herbicides (Glufosinate)

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

Promoter

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

Terminator

BCH-GENE-SCBD-14975-5 BETA-LACTAMASE GENE | (BACTERIA)

Protein coding sequence | Resistance to antibiotics (Ampicillin)

Notes regarding the genetic elements present in this LMO

The native bar gene initiation codon was modified from GTG to ATG to conform with plant codon usage.

Southern blot analysis indicated that a single copy of the T-DNA was inserted into the host genome with several deletions and rearrangements of some genetic elements. The insertion contains a single intact copy of the bar gene and single incomplete copies of the 35s promoter and beta-lactamase gene. Furthermore, bacterial promoter region for ß-lactamase gene is present in DLL 25, but the gene is truncated in the 3’ region. It was determined (1) that the truncated ß-lactamase gene present in DLL 25 line did not, when introduced into the E. coli, produce active ß-lactamase, and (2) that the truncated ß-lactamase gene present in the DLL 25 line does not produce any protein detectable on a Western blot. The insert also contains two partial copies of the T7 terminator element. EN

LMO characteristics

Modified traits

Resistance to herbicides
Glufosinate
Resistance to antibiotics
Ampicillin

Common use(s) of the LMO

Food
Feed

Additional Information

Additional Information

The maize line DLL25 (synonym B16) was genetically engineered to express tolerance to glufosinate ammonium, the active ingredient in phosphinothricin herbicides (Basta®, Rely®, Finale®, and Liberty®). Glufosinate chemically resembles the amino acid glutamate and acts to inhibit an enzyme, called glutamine synthetase, which is involved in the synthesis of glutamine. Essentially, glufosinate acts enough like glutamate, the molecule used by glutamine synthetase to make glutamine, that it blocks the enzyme's usual activity. Glutamine synthetase is also involved in ammonia detoxification. The action of glufosinate results in reduced glutamine levels and a corresponding increase in concentrations of ammonia in plant tissues, leading to cell membrane disruption and cessation of photosynthesis resulting in plant withering and death.

Glufosinate tolerance in this maize line is the result of introducing a gene encoding the enzyme phosphinothricin-N-acetyltransferase (PAT) isolated from the common aerobic soil actinomycete, Streptomyces hygroscopicus, the same organism from which glufosinate was originally isolated. The PAT enzyme catalyzes the acetylation of phosphinothricin, detoxifying it into an inactive compound.

Other relevant website addresses and/or attached documents

? DKB-8979Ø-5 - OECD *(English)*

? DKB-8979Ø-5 - CERA *(English)*

? DKB-8979Ø-5 - DEKALB.pdf *(English)*

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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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