LIVING MODIFIED ORGANISM (LMO)

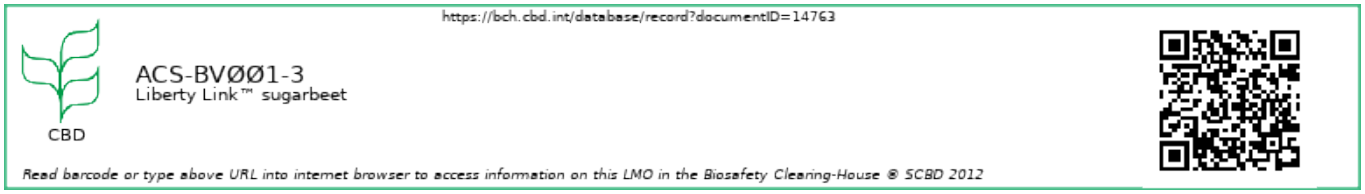
BCH-LMO-SCBD-14763-5

? 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

Liberty Link™ sugarbeet	EN

Transformation event

T120-7

Unique identifier

ACS-BVØØ1-3

Developer(s)

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

ORGANIZATION

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

Description

Sugar beet tolerant to the herbicide glufosinate, created through introduction of the phosphinothricin acetyltransferase (pat) gene from Streptomyces viridochromogenes, an aerobic soil bacteria, which confers tolerance to the herbicide Phosphinothricin (Glufosinate ammonium). Neomycin phosphotransferase II (npt II) confers tolerance to the antibiotic kanamycin.	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-12097-4 ORGANISM | BETA VULGARIS (COMMON BEET, SUGARBEET, BETMA)

Crops

Characteristics of the modification process

Vector

pOCA18/Ac EN

Techniques used for the modification

Agrobacterium-mediated DNA transfer

Genetic elements construct

P-35S-CaMV 0.531 kb	CS-bar-STRHY 0.551 kb	T-35S-CaMV 0.225 kb
P-nos-RHIRD 0.337 kb	CS-nptII-ECOLX 0.795 kb	T-ocs-RHIRD 0.792 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-15002-4 PHOSPHINOTHRICIN N-ACETYLTRANSFERASE GENE

Protein coding sequence | Resistance to herbicides (Glufosinate)

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

Protein coding sequence | Resistance to antibiotics (Kanamycin)

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-100290-6 CAMV 35S TERMINATOR

Terminator

BCH-GENE-SCBD-100270-6 NOPALINE SYNTHASE GENE PROMOTER

Promoter

BCH-GENE-SCBD-100271-5 OCTOPINE SYNTHASE GENE TERMINATOR

Terminator

Notes regarding the genetic elements present in this LMO

The native pat gene was modified to reduce the G/C content of the DNA sequence and to a plant preferred codon sequence. The native and modified genes share 70% sequence homology however there was no change to the amino acid sequence.

Southern blot and PCR analysis indicated that a single insert of the T-DNA was integrated into the host genome and single copies of each of the bar and nptII genes.

EN

LMO characteristics

Modified traits

Resistance to herbicides
Glufosinate
Resistance to antibiotics
Kanamycin

Common use(s) of the LMO

Food
Feed

Additional Information

Additional Information

The sugar beet line T120-7 was genetically engineered to express tolerance to glufosinate ammonium, the active ingredient in phosphinothricin herbicides (Basta®, Rely®, Finale®, and Liberty®). Glufosinate ammonium acts by inhibiting the plant enzyme glutamine synthetase, a key enzyme that detoxifies ammonia by incorporating it into glutamine. Inhibition of this enzyme leads to an accumulation of ammonia in the plant tissues, which kills the plant within hours of application. Phosphinothricin herbicides applied at rates recommended for effective weed control are toxic to conventional sugar beet varieties. The modified T120-7 line permits growers to use phosphinothricin-containing herbicides for weed control in the cultivation of sugar beet.

Glufosinate tolerance in T120-7 sugar beet is the result of the introduction of the pat gene into the beet genome via Agrobacterium-mediated transformation. The pat gene was isolated from the common soil fungus, Streptomyces viridochromogenes, and encodes the enzyme phosphinothricin-N-acetyltransferase (PAT). PAT catalyses the acetylation of phosphinothricin which detoxifies it into an inactive compound.

Other relevant website addresses and/or attached documents

? ACS-BVØØ1-3 - OECD *(English)*

? ACS-BVØØ1-3 - CERA *(English)*

? ACS-BVØØ1-3 - AgrEvo.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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