



Biosafety Clearing-House (BCH)

LIVING MODIFIED ORGANISM (LMO)

BCH-LMO-SCBD-15331-7

? Decisions on the LMO ? Risk Assessments

LAST UPDATED: 01 AUG 2019

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. https://bch.cbd.int/database/record?documentID=15331 MON-ØØ163-7 Roundup Ready™ alfalfa CBD Read barcode or type above URL into internet browser to access information on this LMO in the Biosafety Clearing-House @ SCBD 2012 Name Roundup Ready[™] alfalfa

Transformation event

J163

Unique identifier

MON-ØØ163-7

Developer(s)

- ORGANIZATION: MONSANTO | BCH-CON-SCBD-14925-3

ORGANIZATION

Monsanto 800 North Lindbergh Blvd. St. Louis, MO 63167, United States of America Phone: + 1 314 694-1000 Fax: +1 314 694-3080 Website: http://www.monsanto.com

Description

Medicago sativa, also known as alfalfa or lucerne, is a perennial herbaceous legume. It contains the 5-enolpyruvylshikimate-3-phosphate synthase gene from Agrobacterium tumefaciens strain CP4 to confer tolerance to glyphosate, the active ingredient in the herbicide Roundup®, and allow producers to use the herbicide a weed control option. Due to EN

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the inclusion of the Figwort Mosaic Virus 356S promoter, herbicide tolerance is constitutive and allows for weed control at anytime (early, pre-plant, pre-emergence, and postemergence).

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-12100-4 ORGANISM MEDICAGO SATIVA (ALFALFA, LUCERNE, MEDSV)

Crops

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

Proprietary alfalfa clone 'R2336.'

Characteristics of the modification process

Vector

PV-MSHT4

Techniques used for the modification

Agrobacterium-mediated DNA transfer

Genetic elements construct

P-34S-FMV	L-HSP70	TP-ctp2-ARATH	CS-CP4epsps-RHIRD	T-rbcS_E9-PEA	
0.980 kb	0.105 kb	0.227 kb	1.367 kb	0.632 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-14979-7 5-ENOLPYRUVYLSHIKIMATE-3-PHOSPHATE SYNTHASE GENE					
Protein coding sequence Resistance to herbicides (Glyphosate)					
BCH-GENE-SCBD-101507-5 FMV 34S PROMOTER Promoter					
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-101877-5 RBCS-E9 GENE TERMINATOR (GARDEN PEA) Terminator					

Notes regarding the genetic elements present in this LMO

Transcription of the herbicide tolerance gene, 5-enolpyruvylshikimate-3-phosphate synthase (*cp4-epsps*) from *Agrobacterium tumefaciens*, is under control of the Figwort Mosaic Virus 35S promoter and the *Pisum sativum* Rubisco small subunit terminator. The transcript also

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contains the *Petunia hybrid* heat shock protein 70 5'untranslated region for enhanced translation and the *Arabidopsis thaliana* chloroplast transit peptide 2 for targeting the translated polypeptide to the chloroplast. Transcript level are expected to be elevated due to the constitutive, viral promoter and the protein sequestered in the chloroplasts.

Note:

- A single T-DNA integration site was detected by Southern blot analysis
- The vector backbone was not integrated into the J163 genome

- A single basepair change (A to C) was detected in the J163 insertion. However, the change occurs in an intervening sequence and thus is not expected to change the sequences transcribed or translated.

LMO characteristics

Modified traits

 Resistance to herbicides

 Glyphosate

 Common use(s) of the LMO

Food Feed

Additional Information

Additional Information

Lucerne is a forage crop for feeding to dairy cattle and horses, as well as a valuable feed crop for beef cattle, sheep and other livestock. It is a nitrogen-fixing crop due to its symbiosis with *Rhizobium meliloti* and has the ability to improve soil fertility.

The EPSPS gene is present in animals, fungi, bacteria and plants and is responsible for aromatic amino acid biosynthesis. Glycophosate binds to the plant version of the EPSPS gene and blocks enzymatic biosynthesis of the aromatic amino acids and leads to the death of the plant. The introduced gene was isolated from the common soil bacterium *Agrobacterium tumefaciens* strain CP4 and the form of EPSPS enzyme produced by this gene has a low affinity for glycophosate, thus allowing for the continued biosynthesis of aromatic amino acids.

Other relevant website addresses and/or attached documents

? MON-ØØ163-7 - APHIS (English)

BCH-LMO-SCBD-15331-7

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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