

## Biosafety Clearing-House (BCH)

LIVING MODIFIED ORGANISM (LMO)


BCH-LMO-SCBD-112997-1

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

LAST UPDATED: 10 JAN 2018

### 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.



**IR-ØØGR2E-5**  
Provitamin A biofortified rice

CBD

<https://bch.cbd.int/database/record?documentID=112997>



Read barcode or type above URL into internet browser to access information on this LMO in the Biosafety Clearing-House © SCBD 2012

Name

Provitamin A biofortified rice

EN

Transformation event

GR2E

Unique identifier

IR-ØØGR2E-5

Developer(s)

- **ORGANIZATION:** INTERNATIONAL RICE RESEARCH INSTITUTE | [BCH-CON-SCBD-112996-1](#)

#### ORGANIZATION

International Rice Research Institute  
Private sector (business and industry)  
Laguna  
Philippines

Description

Rice event GR2E (IR-ØØGR2E-5) was developed through the use of recombinant-DNA techniques to express elevated levels of provitamin A (mainly  $\beta$ -carotene) in the rice endosperm, which is converted in the body to vitamin A.

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-10454-5** ORGANISM | ORYZA SATIVA (RICE, ORYSA) |

Crops

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

japonica rice cultivar Kaybonnet

EN

## Characteristics of the modification process

Vector

pSYN12424

EN

Techniques used for the modification

Agrobacterium-mediated DNA transfer

Genetic elements construct

<b>P-ubi1-MAIZE</b> 1.993 kb	<b>I-1_ubi1-MAIZE</b> 0.000 kb	<b>CS-pmi-ECOLX</b> 1.176 kb	<b>T-nos-RHIRD</b> 0.253 kb
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<b>P-GluA2-ORYSA</b> 0.828 kb	<b>CS-PSY1</b> 1.233 kb	<b>T-nos-RHIRD</b> 0.253 kb
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<b>P-GluA2-ORYSA</b> 0.828 kb	<b>TP-rbcS-PEA</b> 0.171 kb	<b>CS-CRTI-PANAN</b> 1.479 kb	<b>T-nos-RHIRD</b> 0.253 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-100362-7** UBIQUITIN GENE PROMOTER | (MAIZE, CORN) |

Promoter

**BCH-GENE-SCBD-103627-5** UBIQUITIN INTRON 1 | (MAIZE, CORN) |

Intron

**BCH-GENE-SCBD-15003-7** PHOSPHOMANNOSE ISOMERASE GENE | (BACTERIA) |

Protein coding sequence | Mannose tolerance, Selectable marker genes and reporter genes

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

Terminator

**BCH-GENE-SCBD-112995-1** GLUTELIN GENE PROMOTER | (RICE) |

Promoter

**BCH-GENE-SCBD-103620-2** PHYTOENE SYNTHASE 1 GENE | (MAIZE, CORN) |

Protein coding sequence | Changes in quality and/or metabolite content (Vitamins)

**BCH-GENE-SCBD-103616-4** RBCS TRANSIT PEPTIDE | (GARDEN PEA) |

Transit signal

**BCH-GENE-SCBD-103621-3** PHYTOENE DESATURASE GENE |

Protein coding sequence | Changes in quality and/or metabolite content (Vitamins)

Notes regarding the genetic elements present in this LMO

Based on molecular characterization of GR2E rice, one copy of the pSYN12424 T-DNA was introduced at a single site within the rice genome and stably inherited over multiple generations as a single genetic locus according to Mendelian rules of inheritance. In addition, nucleotide sequencing of the entire inserted DNA, including portions of the 5' and 3' flanking rice genomic sequence, confirmed that the T-DNA had been inserted without modifications, deletions, or rearrangements, except for small truncations at the 5' and 3' termini of 23 bp and 11 bp, respectively. There were also no new novel open reading frames created as a consequence of the DNA insertion that would have the potential to encode a protein with any significant amino acid sequence similarity to known and putative toxins or allergens.

EN

## LMO characteristics

Modified traits

Changes in quality and/or metabolite content  
Vitamins

Common use(s) of the LMO

Food

## Additional Information

Other relevant website addresses and/or attached documents

? [Provitamin A Biofortified Rice Event GR2E - FSANZ \( English \)](#)

[BCH-LMO-SCBD-112997-1](#)

## 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.

**Secretariat of the Convention  
on Biological Diversity**

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