



Australian Government

Department of Health

Office of the Gene Technology Regulator

Licence for dealings involving an intentional release of a GMO into the environment

Licence No.: DIR 155

Licence holder: Nuseed Pty Ltd

Commercial release of canola genetically modified for omega-3 oil content

(DHA canola NS-B5ØØ27-4)

Issued: 13 February 2018

More information about the decision to issue this licence is contained in the Risk Assessment and Risk Management Plan prepared in connection with the assessment of the application for the licence. This document can be obtained from the Office of the Gene Technology Regulator website or by telephoning the Office on 1800 181 030.

Gene Technology Regulation in Australia

Australia's gene technology regulatory system operates as part of an integrated legislative framework. The Gene Technology Act 2000 (Cth) and corresponding state and territory legislation form a substantial part of a nationally consistent regulatory system controlling the development and use of genetically modified organisms (GMOs).

This licence is issued by the Gene Technology Regulator in accordance with the Gene Technology Act 2000 and, as applicable, Corresponding State Law.

The Gene Technology Regulator is required to consult with, and take into account advice from, a range of key stakeholders, including other regulatory authorities, on risks to human health and safety and to the environment in assessing applications for dealings involving the intentional release of GMOs into the Australian environment.

Other agencies that also regulate GMOs or GM products include Food Standards Australia New Zealand, Australian Pesticides and Veterinary Medicines Authority, Therapeutic Goods Administration, National Industrial Chemicals Notification and Assessment Scheme and the Department of Agriculture and Water Resources. Dealings conducted under any licence issued by the Regulator may also be subject to regulation by one or more of these agencies. It is recommended that the licence holder consult the relevant agency (or agencies) about their regulatory requirements.

The licence authorises the licence holder and persons covered by the licence to conduct specified dealings with the genetically modified organism(s) listed in Attachment A of this licence.

Dealings permitted by this licence may also be subject to the operation of State legislation declaring areas to be GM, GM free, or both, for marketing purposes.

Section 1 Interpretations and Definitions

1. In this licence:

- (a) unless defined otherwise in this licence, words and phrases used in this licence have the same meaning as they do in the Act and the Regulations;
- (b) words importing a gender include any other gender;
- (c) words in the singular include the plural and words in the plural include the singular;
- (d) words importing persons include a partnership and a body whether corporate or otherwise;
- (e) references to any statute or other legislation (whether primary or subordinate) are a reference to a statute or other legislation of the Commonwealth of Australia as amended or replaced from time to time and equivalent provisions, if any, in corresponding State law, unless the contrary intention appears;
- (f) where any word or phrase is given a defined meaning, any other part of speech or other grammatical form in respect of that word has a corresponding meaning;
- (g) specific conditions prevail over standard conditions to the extent of any inconsistency.

2. In this licence:

'Act' means the Gene Technology Act 2000 (Cth) or the corresponding State legislation under which this licence is issued.

'Annual Report' means a written report provided to the Regulator by the end of September each year containing all the information required by this licence to be provided in the Annual Report for the preceding financial year.

'Canola' means plants of the species *Brassica napus* L.

'GM' means genetically modified.

'GMOs' means the genetically modified organisms that are the subject of the dealings authorised by this licence.

'OGTR' means the Office of the Gene Technology Regulator.

Section 2 Licence conditions and obligations

- 3. This licence does not authorise dealings with GMOs that are otherwise prohibited as a result of the operation of State legislation declaring areas to be GM, GM free, or both, for marketing purposes.
- 4. This licence remains in force until it is suspended, cancelled or surrendered. No dealings with GMOs are authorised during any period of suspension.
- 5. The holder of this licence ('the licence holder') is Nuseed Pty Ltd.
- 6. The licence holder must immediately notify the Regulator via OGTR.M&C@health.gov.au if any of their contact details change.
- 7. Any person, including the licence holder, may conduct any permitted dealing(s) with the GMOs.
- 8. All dealings with the GMOs are permitted.
- 9. Dealings with the GMOs may be conducted in all areas of Australia.
- 10. The GMOs covered by this licence are described in Attachment A of the licence.
- 11. To the extent that the conditions of any prior licence authorising dealings with the GMOs are inconsistent with the conditions of this licence, the conditions of this licence will prevail.

2.1 Obligations of the Licence Holder

Prior to issuing a licence, the Regulator considers suitability of the applicant to hold a licence. The following conditions address ongoing suitability of the licence holder.

12. The licence holder must, at all times, remain an accredited organisation in accordance with the Act and must comply with its instrument of accreditation.
13. The licence holder must:
 - (a) inform the Regulator immediately in writing, of:
 - i. any relevant conviction of the licence holder occurring after the commencement of this licence; and
 - ii. any revocation or suspension of a licence or permit held by the licence holder under a law of the Australian Government, a State or a foreign country, being a law relating to the health and safety of people or the environment; and
 - iii. any event or circumstances occurring after the commencement of this licence that would affect the capacity of the holder of this licence to meet the conditions in it; and
 - (b) provide any information related to the licence holder's ongoing suitability to hold a licence, if requested, by the Regulator, within the timeframe stipulated in the request.
14. The licence holder must inform any person covered by this licence, to whom a particular condition of the licence applies, of the following:
 - (a) the particular condition (including any variations of it); and
 - (b) the cancellation or suspension of the licence; and
 - (c) the surrender of the licence

2.2 Provision of new information to the Regulator

Licence conditions are based on the risk assessment and risk management plan developed in relation to the application using information available at the time of assessment. The following condition requires that any new information that may affect the risk assessment is communicated to the Regulator.

15. The licence holder must inform the Regulator if the licence holder becomes aware of:
 - (a) additional information as to any risks to the health and safety of people, or to the environment, associated with the dealings authorised by the licence; or
 - (b) any contraventions of the licence by a person covered by the licence; or
 - (c) any unintended effects of the dealings authorised by the licence.

Note: The Act requires, for the purposes of the above condition, that:

- (a) *the licence holder will be taken to have become aware of additional information of a kind mentioned in paragraph 15(a) if he or she was reckless as to whether such information existed; and*
- (b) *the licence holder will be taken to have become aware of contraventions, or unintended effects, of a kind mentioned in paragraph 15(b), if he or she was reckless as to whether such contraventions had occurred, or such unintended effects existed.*

Note: Contraventions of the licence may occur through the action or inaction of a person.

16. If the licence holder is required to inform the Regulator under the immediately preceding condition, the Regulator must be informed without delay.

Note: An example of informing without delay is contact made at the time of the incident via the OGTR free call phone number 1800 181 030, which provides emergency numbers for incidents that occur out of business hours. Notification without delay will allow the OGTR to conduct a risk assessment on the incident and attend the location if required.

17. If at any time the Regulator requests the licence holder to collect and provide information about any matter to do with the progress of the dealings authorised by this licence, including but not confined to:
- (a) additional information as to any risks to the health and safety of people, or to the environment, associated with the dealings authorised by the licence, whether or not the licence holder has provided information to the Regulator under condition 15(a);
 - (b) any contraventions of the licence by a person covered by the licence, whether or not the licence holder has provided information to the Regulator under condition 15(b);
 - (c) any unintended effects of the dealings authorised by the licence, whether or not the licence holder has provided information to the Regulator under condition 15(c);
 - (d) research, including by way of survey, to verify predictions of the risk assessment, or for any purpose related to risks to the health and safety of people, or to the environment;
 - (e) scientific literature and reports in respect of the GMOs authorised by this licence, for a nominated period;
 - (f) details of any refusals of applications for licences or permits (however described) to deal with the GMOs made pursuant to the regulatory laws of a foreign country;

and the request is reasonable, having regard to consistency with the Act and relevance to its purpose, then the licence holder must collect the information and provide it to the Regulator at a time and in the manner requested by the Regulator.

Note: The Regulator may invite the licence holder to make a submission on the reasonability of a request by the Regulator to collect and provide information relevant to the progress of the GMO.

2.3 Obligations of persons covered by the licence

18. Persons covered by this licence must not deal with the GMOs except as expressly permitted by this licence.
19. If a person is authorised by this licence to deal with the GMOs and a particular condition of this licence applies to the dealing by that person, the person must allow the Regulator, or a person authorised by the Regulator, to enter premises where the dealing is being undertaken, for the purposes of auditing or monitoring the dealing.

Section 3 Reporting and Documentation Requirements

3.1 Annual Report

20. The licence holder must provide an Annual Report to the Regulator. An Annual Report must include the following:
- (a) information about any adverse impacts, unintended effects, or new information relating to risks, to human health and safety or the environment caused by the GMOs or material from the GMOs;
 - (b) information about the volumes of the GMOs grown for commercial purposes, including seed increase operations, in each State and Territory for each growing season in the period;
 - (c) information about the volumes of the GMOs grown for non-commercial (e.g. research) purposes in each State and Territory for each growing season in the period.

3.2 Testing methodology

21. Prior to conducting any dealings with the GMOs, the licence holder must provide to the Regulator a written methodology to reliably detect the GMOs, and the presence of the genetic modifications described in this licence in a recipient organism. The detection method must be capable of identifying, to the satisfaction of the Regulator, the specific genetic modifications in the GMOs described in this licence.

DIR No: 155

Full Title: Commercial release of canola genetically modified for omega-3 oil content (DHA canola NS-B50027-4)

Organisation Details

Postal address: Nuseed Pty Ltd
PO Box 103
103-105 Pipe Road, Laverton Vic 3026

Phone No: (03) 9282 1359

IBC Details

IBC Name: Nuseed Institutional Biosafety Committee

GMO Description

GMOs covered by this licence

Brassica napus L. genetically modified by the introduction of only the genes and genetic elements listed below.

Parent Organism

Common Name: Canola
Scientific Name: *Brassica napus* L.

Modified traits

Category: Composition - food (human nutrition)
Composition - animal nutrition
Selectable marker - herbicide

Description: The GM canola has been genetically modified for production of long chain omega-3 fatty acids, more specifically for the production of docosahexaenoic acid (DHA), in the seed. The GM canola also contains a selectable marker.

Genetic elements responsible for conferring the modified traits:

Seven genes from marine microalgae and yeast, and one selectable marker gene from a soil bacterium, as well as other genetic elements, are detailed in Tables 1 and 2 of this attachment.

Purpose of the dealings with the GMO

The purpose of the dealings is commercial production of the GM canola in all commercial canola growing areas of Australia and for products of the GMO to enter general commerce.

Table 1. Introduced genes in DHA canola

Gene	Encoded protein	Source organism	Intended function*
<i>Lackl-d12D</i>	Δ 12-desaturase	Yeast (<i>Lachancea kluyveri</i>)	Convert OA to LA
<i>Picpa-w3D</i>	Δ 15-/omega3-desaturase	Yeast (<i>Pichia pastoris</i>)	Convert LA to ALA
<i>Micpu-d6D</i>	Δ 6-desaturase	Microalga (<i>Micromonas pusilla</i>)	Convert ALA to SDA
<i>Pyrco-d6E</i>	Δ 6-elongase	Microalga (<i>Pyramimonas cordata</i>)	Convert SDA to ETA
<i>Pavsa-d5D</i>	Δ 5-desaturase	Microalga (<i>Pavlova salina</i>)	Convert ETA to EPA
<i>Pyrco-d5E</i>	Δ 5-elongase	Microalga (<i>Pyramimonas cordata</i>)	Convert EPA to DPA
<i>Pavsa-d4D</i>	Δ 4-desaturase	Microalga (<i>Pavlova salina</i>)	Convert DPA to DHA
<i>pat</i>	Phosphinothricin acetyl transferase	Soil bacterium (<i>Streptomyces viridochromogenes</i>)	Selectable marker (tolerance to glufosinate herbicides)

* ALA, α -linolenic acid (18:3 ^{Δ 9,12,15}); DHA, docosahexaenoic acid (22:6 ^{Δ 4,7,10,13,16,19}); DPA, docosapentaenoic acid (22:5 ^{Δ 7,10,13,16,19}); EPA, eicosapentaenoic acid (20:5 ^{Δ 5,8,11,14,17}); ETA, eicosatetraenoic acid (20:4 ^{Δ 8,11,14,17}); LA, linoleic acid (18:2 ^{Δ 9,12}); OA, oleic acid (18:1 ^{Δ 9}); SDA, stearidonic acid (18:4 ^{Δ 6,9,12,15}).

Table 2. Regulatory elements used in DHA canola

Element	Function	Source
PRO Linus-Cnl1	Seed-specific Promoter	<i>Conlinin 1</i> gene from <i>Linum usitatissimum</i> (Flax)
PRO Linus-Cnl2	Seed-specific Promoter	<i>Conlinin 2</i> gene from <i>L. usitatissimum</i>
PRO Arath-FAE1	Seed-specific Promoter	Fatty Acid Elongase gene from <i>Arabidopsis thaliana</i>
PRO Brana-FP1	Seed-specific Promoter	<i>napA</i> gene from <i>Brassica napus</i> (Canola)
CaMV 35S	Constitutive Promoter	35S gene from Cauliflower mosaic virus
TER Linus-Cnl1	Terminator	<i>Conlinin 1</i> gene from <i>L. usitatissimum</i>
TER Linus-Cnl2	Terminator	<i>Conlinin 2</i> gene from <i>L. usitatissimum</i>
TER Glyma-Lectin	Terminator	Lectin gene from <i>Glycine max</i> (Soybean)
TER Agrtu-NOS	Terminator	Nopaline synthase gene from <i>Agrobacterium tumefaciens</i>
MAR Nicta-RB7	Matrix attachment region (MAR) for increasing gene expression	<i>Nicotiana tabacum</i> (tobacco)
TMV 5'-untranslated leader sequence	Enhancer	Tobacco mosaic virus