SUMMARY NOTIFICATION INFORMATION FORMAT FOR THE RELEASE OF GENETICALLY MODIFIED HIGHER PLANTS
According to Council Decision 2002/813/EC

A. General information

1. Details of notification

(a) Notification number
B/IE/12/01

(b) *Date of acknowledgement of notification*
27/02/2012

(c) Title of the project
Assessing and monitoring the impact on the agri-environment of genetically modified potatoes with resistance to *Phytophthora infestans*, causative organism of late blight disease (2012 – 2016)

(d) *Proposed period of release*
From 01/06/2012 to 31/12/2016

2. Notifier

Name of institute or company:
Teagasc,
Oak Park,
Carlow,
Ireland

3. Is the same GMPt release planned elsewhere, inside or outside the Community [in conformity with Article 6(1)] by the same notifier?

Yes No (xx)

If yes, insert the country code(s):
Please use the following country codes:
Austria AT; Belgium BE; Germany DE; Denmark DK; Spain ES; Finland FI; France FR; United Kingdom GB; Greece GR; Ireland IE; Iceland IS; Italy IT; Luxembourg LU; Netherlands NL; Norway NO; Portugal PT; Sweden SE

4. Has the same GMPt been notified for release elsewhere, inside or outside the Community, by the same notifier?

Yes () No (xx)

B. Information of the genetically modified plant

1. Identity of the recipient or parental plant

(a)	Family name	*Solanacea*
(b)	Genus	*Solanum*
(c)	Species	*tuberosum* L.
(d)	Subspecies (if applicable)	*tuberosum*
(e)	Cultivar/breeding line (if applicable)	cv. Desiree
(f)	Common name	Potato

2. Description of the traits and characteristics, which have been introduced or modified, including marker genes and previous modifications

Enhanced resistance to *Phytophthora infestans* as a result of the transformation of *S. tuberosum* cv. Desiree with the Resistance to *P. infestans* (Rpi) gene vnt1.1 from the wild potato species *S. venturii*.

3. Type of the genetic modification

(a)	Insertion of genetic material	(x)
(b)	Deletion of genetic material	(.)
(c)	Base substitution	(.)
(d)	Cell fusion	(.)
(e)	Other, specify	…

4. In the case of insertion of genetic material, give the source and intended function of each constituent fragment of the region to be inserted

The GM line is cisgenic in nature and only contains the Rpi gene Rpi-vnt1.1 from *S. venturii*, along with its native promoter and terminator.

5. In the case of deletion or other modification of genetic material, give information on the function of the deleted or modified sequences

Not applicable.

6. Brief description of the method used for the genetic modification

The genetic modification of the *S. tuberosum* cv. Desiree genome was mediated by *Agrobacterium tumefaciens*, in a process termed *Agrobacterium tumefaciens*-mediated transformation (ATMT).

7. If the recipient or parental plant is a forest tree species, describe ways and extent of dissemination and specific factors affecting dissemination

Not applicable.

C. Information relating to the experimental release

1. Purpose of the release (including any relevant information available at this stage) such as agronomic purposes, test of hybridisation, changed survivability or dissemination, test of effects on target or non-target organisms

The purpose of this release is to:

- Quantify the impact of GM potato cultivation on bacterial, fungal, nematode and earthworm diversity in the soil, compared to a conventional potato system.
- Identify integrated pest management (IPM) strategies and components which could be positively or negatively affected by the adoption of GM late blight resistant potato.
- Employ the project's resources as a tool for education and demonstration in order to proactively engage and discuss the issues that most concern stakeholders and the public at large in regards to the cultivation of GM crops in Ireland.

2. Geographical location of the release site

The release site will be located at Oak Park, Co. Carlow.

3. Size of the site (m^2)

In 2012 a single plot will be sown, of a size no greater than 1 acre. To ensure statistical validity of collated datasets, two sites will be sown in 2013, 2014 and 2015. Each site will not exceed 1ha in total and each site will be defined and measured by GPS, to facilitate site identification and monitoring in subsequent years.

4. Relevant data regarding previous releases carried out with the same GM-plant, if any, specifically related to the potential environmental and human health impacts from the release

The same cisgenic line has been cultivated in the Netherlands and no adverse environmental impacts have been recorded. The Rpi-vnt1.1 gene does not confer any fitness advantage over any abiotic stress.

D. Summary of the potential environmental impact of the release of the GMPts in accordance with Annex II, D2 to Directive 2001/18/EC

The cisgenic potato line contains the NB-LRR gene Rpi-vnt1.1 from *S. venturii*, which confers broad spectrum resistance to *P. infestans*. Many conventional potato varieties also contain NB-LRR-genes that have been introgressed from wild *Solanum* species. The NB-LRR class of genes are present in many cultivated plants and the model plant organism Arabidopsis. The interaction between the protein of the Rpi gene and the elicitor (effector) of the corresponding gene in the pathogen is responsible for the generation of a hypersensitive response at the cellular level of the plant against the pathogen. This results in localised cell death surrounding the point of initial infection. As a result, the development and advancement of the pathogen is

blocked, leading to a resistant phenotype. Depending on the resistance genes involved in the host-pathogen interaction, the expression of the NB-LRR genes can occur at the earlier or later stages of the infection process. The effect of the cisgene in *S. tuberosum* cv. Desiree is that it will display strong resistance to *P. infestans*, in contrast to the highly *P. infestans* susceptible phenotype of non-GM cv. Desiree. The potential impact of horizontally transferred antibiotic resistance from GM potato into the environment is irrelevant for this notification as the intended cisgenic material does not contain an antibiotic resistance marker gene.

E. Brief description of any measures taken by the notifier for the control of risks including isolation designed to limit dispersal, for example for monitoring and post-harvest monitoring proposals

An isolation distance of 40 m to other potato varieties will be observed. Planting and harvesting equipment will be cleaned on site to prevent the dispersal of GM tubers. There will be no potato cultivation on the GM sites in the year following the release. Potential volunteers will be monitored and removed according to conventional agricultural practice. During the release the trial site will be monitored at defined intervals.

F. Summary of planned field trials designed to gain new data on the environment and human health impact of the release (where appropriate)

The field trials are designed to address the knowledge gap that exists in regards to the impact of GM blight resistant potatoes on the environment. Specifically, the proposed field experiments will provide baseline data on soil biodiversity and will also identify suitable bio-indicators that permit a better integration of GM field experimentation across specific agricultural ecosystems in the EU.