Summary Notification Information Format

A. General information

A1. Details of notification

Notification Number
B/BE/10/V1

Member State
Belgium

Date of Acknowledgement
3 November 2010

Title of the Project
Two year field trial with genetically modified potatoes that are less susceptible to late blight

Proposed period of release:
01/04/2011 to 31/10/2012

A2. Notifier

Name of the Institute(s) or Company(ies)
University of Ghent

A3. Is the same GMPt release planned elsewhere in the Community?
The same lines are also intended to be experimentally released in The Netherlands.

A4. Has the same GMPt been notified elsewhere by the same notifier?
No

B. Information on the genetically modified plant

B1. Identity of the recipient or parental plant

(a) Family name:	*Solanaceae*
(b) Genus:	*Solanum*
(c) Species:	*tuberosum*
(d) Subspecies:	*tuberosum*
(e) Cultivar / breeding line:	Désirée
(f) Common name:	potato

B2. Description of the traits and characteristics which have been introduced or modified, including marker genes and previous modifications
The genetically modified potatoes are less susceptible to late blight as a result of the introduction of one or three resistance genes stemming from wild relatives from the potato originating from the

Andes. All genes belong to the NBS-LRR class, which code for a class of proteins that are very common in plants and are involved in disease resistance. Arabidopsis, for instance, has about 200 of such genes. When the proteins produced by these genes bind to an elicitor produced by a virulence gene of a pathogen a hypersensitivity reaction is triggered, resulting in the death of the cell in which the binding took place. In this way further spread of the pathogen is blocked. The interaction between the genes is very specific. Specific NBS-LRR proteins bind to specific elicitors.

In a number of the genetically modified lines that will be introduced also the NPT-II antibiotic resistance gene is present. This gene is present as a selection marker for the plant transformation and fullfils no function in the final potao. The rest of the lines is marker free and contain only sequences stemming from wild tuber bearing family member of the potato and are therefore 'cisgenic'.

B3. Type of genetic modification
Insertion of genetic material.

B4. In case of insertion of genetic material, give the source and intended function of each constituent fragment of the region to be inserted
The region to be inserted, which is flanked by the T-DNA borders from the Ti-plasmid of Agrobacterium tumefaciens contains either:

- One resistance gene (Rpi-vnt1, stemming from solanum venturii)
- One resistance gene and a selection marker gene (Rpi-sto1 + nptII, stemming from solanum stoloniferum and from Tn5 respectively)
- Three resistance genes and a selection marker gene (Rpi-vnt1+Rpi-sto1+Rpi-blb3+nptII, stemming from solanum venturii,)

As already indicated under B2 the Rpi-genes contribute to a decreased susceptibility to late blight. All three Rpi-genes involved are under the control of their own natural expression signals.

The npt-II gene expression is driven by the NOS promoter and terminator. The npt-II gene stems from the transposon Tn5. The NOS promoter and terminator originate from *Agrobacterium tumefaciens.* The npt-II gene functions as a selection marker during the transformation and regeneration of the potato plants.

B5. In the case of deletion or other modification of genetic material, give information on the function of the deleted or modified sequences
Not applicable

B6. Brief description of the method used for the genetic modification
The method used for the genetic transformation is based on Agrobacterium tumefaciens cocultivation with potato derived plant tissue. After this cocultivation step where the gene transfer takes place, the transformed cells are:

-Either selected using a positive screen (based on resistance to the antibiotic kanamycin) and induced to regenerate a whole plant.

-Or induced to regenerate a whole plant without using a positive screen. This is done in case of the single gene Rpi-vnt1 construct, that does not harbour a selection marker. All regenerated plants have then been subjected to a PCR to check for the presence of the Rpi-vnt1 insert. Lines that had not been genetically modified were discarded.

C. Experimental Release

C1. Purpose of the release
The purpose of the release is to test the susceptibility of the genetically modified potato lines to late blight under Belgian climatic and soil conditions.

C2. Geographical location of the site
The site of release is located in the municipality of Wetteren.

C3. Size of the site (m2)
The size of the site will be no more than 1500 m^2, including non-genetically modified reference and control lines.

C4. 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

There have been no earlier releases with the same GM plant.

D. Summary of the potential environmental impact from the release of the GMPts

The direct environmental impact from the release is expected to be zero. A decreased susceptibility of potato to late blight using natural resistance genes, which are under the control of their own natural expression signals, which stem from wild Solanum species, and of which similar genes are already present in conventional varieties that are on the market, does not lead to any environmental impact. The resistance is also so specific (specific resistance proteins react with very specific elicitors resulting from specific avirulence genes of *Phytophthora infestans*), that the interaction with other fungi (such as *Alternaria*) or fungi-like organisms is not expected to change in any way.

There will be no spread of genetically modified potatoes from the release, as the distance to other potato fields will be such that no successful hybridization can take place, and also any hybridization is extremely unlikely to result in the formation of a viable genetically modified potato seed. On top of that potato volunteers do not establish and are destroyed in normal agricultural weed killing programmes. In the European Union potato is not able to establish itself in the natural environment and there are no wild relatives with which potato can hybridize.

The presence of the antibiotics resistance gene npt-II also does not lead to any unwanted negative impact on the environment, and we refer for this to the most recent consolidated opinion of EFSA of 2009 concerning the use of the npt-II resistance gene as a selectable marker in plants.

There is an indirect positive environmental impact resulting from the release, as these potato lines will not have to be sprayed with fungicides to control late blight.

E. Brief description of any measures taken for the management of risks

There will be a very careful harvesting of the potato tubers by hand with the goal to prevent any tubers to remain in the soil after the trial. In the years following the trial there will be monitoring to detect any potato volunteers. Detected volunteers will be destroyed using a herbicide. The

monitoring will continue until there has been one full growing season in which no volunteers were detected anymore.

F. Summary of foreseen field trial studies focused to gain new data on environmental and human health impact from the release

In this field trial there will be additional data collection on the susceptibility of the genetically modified lines to *Alternaria* and some harmful insects, in comparison to their parental lines.