SUMMARY NOTIFICATION INFORMATION FORMAT (SNIF) FOR PRODUCTS CONTAINING GENETICALLY MODIFIED HIGHER PLANTS (GMHP)

NK603 Roundup Ready® Maize

A. GENERAL INFORMATION

1. Details of notification

(a) Member State of notification: Spain
(b) Notification number: C/ES/03/01
(c) Name of the product (commercial and other names):   NK603 Roundup Ready®[1] maize
(d) Date of acknowledgement of notification: Not available at time of submission

2. Notifier

(a) Name of notifier: Monsanto Company, represented by Monsanto Europe S.A.	
(b) Address of notifier:	
Monsanto Europe S.A. 270-272 Avenue de Tervuren B-1150 Brussels BELGIUM	Monsanto 800 N. Lindbergh Boulevard St. Louis, Missouri 63167 U.S.A
(c) Is the notifier domestic manufacturer: [X] importer: [ ]	
(d) In case of an import the name and address of the manufacturer shall be given Not applicable.	

3. General description of the product

(a) Name of the recipient or parental plant and the intended function of the genetic modification   NK603 Roundup Ready maize was produced by the introduction of a glyphosate-tolerant 5-enolpyruvylshikimate-3-phosphate synthase (EPSPS) gene from *Agrobacterium* sp. strain CP4 (CP4 EPSPS) into the maize genome. The expression of glyphosate-tolerant CP4 EPSPS proteins in crop plants

[1] Roundup Ready® is a registered trademark of Monsanto Technology LLC.

imparts tolerance to glyphosate (N-phosphonomethyl-glycine), the active ingredient in the non-selective, foliar-applied, broad-spectrum, post-emergent herbicide Roundup®[2]. The use of maize plants containing the Roundup Ready gene enables the farmer to utilise Roundup herbicide for effective control of weeds during the growing season and to take advantage of the favourable environmental and safety characteristics of Roundup herbicide.

(b) Any specific form in which the product must not be placed on the market (seeds, cut-flowers, vegetative parts, etc.) as a proposed condition of the authorisation applied for

This application is for import and use in the European Union (E.U.) of NK603 Roundup Ready maize. The proposed uses of this maize are the same as for any other maize, including the cultivation of NK603 maize varieties and the use in animal feed.

(c) Intended use of the product and types of users

The proposed uses of this maize are the same as for any other maize, including the cultivation of NK603 maize varieties in the E.U. The primary use of maize is for animal feed. Maize is also processed into valuable food and industrial products.

(d) Any specific instructions and/or recommendations for use, storage and handling, including mandatory restrictions proposed as a condition of the authorisation applied for

NK603 Roundup Ready maize has been demonstrated to be substantially equivalent to other maize varieties except for its tolerance to Roundup herbicide. As such, comprehensive information will be provided on seed bags and in accompanying documents of grain shipments in order for purchasers to be fully informed about the use of Roundup Ready maize varieties (for labelling, please see question ***3.*(h)**). The grain, forage and derived products of Roundup Ready maize will be used and handled in the same manner as current commercial maize varieties.

(e) If applicable, geographical areas within the E.U. to which the product is intended to be confined under the terms of the authorisation applied for

NK603 Roundup Ready maize is intended for import, cultivation and use in any geographical area currently producing or processing maize.

(f) Any type of environment to which the product is unsuited

NK603 Roundup Ready maize varieties may be cultivated or used in any environment currently suitable for the production or processing of maize.

(g) Any proposed packaging requirements

NK603 Roundup Ready maize has been shown to be substantially equivalent to other maize varieties. Therefore, NK603 maize grain or derived products will be used in the same manner as with other maize and no specific packaging is foreseen (for the labelling, see question ***3.*(h)**).

[2] Roundup® is a registered trademark of Monsanto Technology LLC.

(h) Any proposed labelling requirements in addition to those required by law

In accordance with the requirements of Directive 2001/18/EC, packages and bags containing NK603 maize seeds for cultivation will be labelled with the following words "This product contains genetically modified organisms" and will be identified using the Roundup Ready trademark to allow farmers to know they are purchasing a maize variety that is tolerant to Roundup herbicide. As for any other variety, all the usual information including variety name, seed quality, seed treatment, manufacturer's name and full address, will be given on the seed package.

In addition, Monsanto will undertake a number of measures to ensure that international traders are provided with the necessary information to comply with statutory requirements relating to the Placing on the Market of NK603 maize. In particular, Monsanto will:

a) Inform farmers and traders of the approval for import of NK603 maize and use thereof (including cultivation of varieties) into the European Union, that this product is a genetically modified organism and that NK603 maize grain may be present in bulk shipments of maize grain. To that effect the words "Contains genetically modified organisms" shall appear on seed bags and either on a label or in an accompanying document to maize grain shipments.

b) Provide traders with the commercial name of the product, the unique identifier (see question ***3.(j)***) and any other relevant product information, including procedures for accessing the European public registers of GM organisms.

c) Advise farmers and traders, and other operators using the product, that NK603 maize is subject to the traceability and labelling requirements of Directive 2001/18/EC and to the requirements of any Community legislation adopted to regulate the traceability and labelling of GM organisms.

It should be noted that other genetically modified maize products have been approved for import into the European Union and that Roundup Ready maize may be marketed in the European Union in mixture with these previously approved maize products.

(i) Estimated potential demand

(i) in the Community

For marketing year 2000, the maize demand and supply in the European Union ('000 hectares, '000 metric tons), including internal trade, are summarised in the table below.

	France	Italy	Spain	Germ.	Greece	Austria	Port.
Area harvested	1766	1064	425	361	215	188	153
Stock change	(68)	39	(169)	(21)	-	282	-
Production	16073	10138	3898	3324	2038	1852	891
Market year imports (total)	432	570	3538	1133	461	155	1116
Market year exports (total)	8212	578	189	715	13	154	28
Total dom. supply	8226	10168	7078	3721	2485	2135	1979

(continued)	Belux	Neth.	Swed.	U.K.	Irel.	Denm.	Finl.	E.U.$_{15}$
Area harvested	36	20	-	-	-	-	-	4228
Stock change	(14)	250	3.4	142	-	13	-	458
Production	399	162	-	-	-	-	-	38774
Market year imports (total)	592	1423	29	1427	146	82	20	11123
Market year exports (total)	52	312	0.4	75	2.5	1.5	0	10332
Total dom. supply	926	1522	32	1494	143	94	20	40022

Source: FAOSTAT Database, 2002.

(ii) in export markets for EC supplies

The EU is not a major exporter of maize, exporting about half a million tonnes each year. This includes an element of food aid, which usually accounts for about three-quarters of the total export volume.

(j) Unique identification code(s) of the GMO(s)

The code NK603 will uniquely identify hybrid seed and grain of NK603 maize until replaced by an internationally recognised unique identifier. It is proposed that NK603 maize is identified by the unique identifier MON-00603-6.

4. Has the GMHP referred to in this product been notified under part B of Directive 2001/18/EC and/or Directive 90/220/EEC?

Yes [X]	**No [ ]**

NK603 Roundup Ready maize has been planted for field testing or breeding purposes in the E.U. since 1999 (Table 1).

Table 1. EU notifications under part B of Directive 2001/18/EC

Year	Country	Notification Number	Authorised by
1999	France	B/FR/99.04.06	Ministry of Agriculture
1999	Italy	B/IT/99-17	Ministry of Health
2000	Belgium	B/BE/00/WSP13	Ministry of Agriculture
2000	France	B/FR/00.03.05	Ministry of Agriculture
2000	Germany	FB5-6786-01-115	Robert Koch Institut
2000	Spain	B/ES/00/06	Ministry of Environment
2001	France	B/FR/01.01.01	Ministry of Agriculture
2001	Spain	B/ES/01/05	Ministry of Environment

(i) If no, refer to risk analysis data on the basis of the elements of Part B of Directive 2001/18/EC

Not applicable

5. Is the product being simultaneously notified to another Member State?

Yes [ ]	**No [X]**

(i) If no, refer to risk analysis data on the basis of the elements of Part B of Directive 2001/18/EC

Please see questions ***9 - 11***, ***14 – 27***, ***29*** and ***31 – 33***, for risk assessment data, including experience from experiments conducted under 90/220/EEC Part B

approvals.

or

Has the product been notified in a third country either previously or simultaneously?

Yes [X]	**No [ ]**
If yes, specify See Part C, Information Relating to Previous Releases, for information on releases notified or carried out inside and outside of the E.U.	

6. Has the same GMHP been previously notified for marketing in the Community?

Yes [X]	**No [ ]**
If yes, give notification number and Member States Notification (C/E/00/01) for import of NK603 maize and use thereof as any other maize, excluding the marketing of varieties in the E.U., has previously been submitted to the Competent Authorities of the *Rapporteur* Member State Spain. This notification received a positive opinion from the Spanish *Rapporteur*, and was forwarded to the European Commission on 16 January 2003 for Member State consultation.	

7. Measures to take in case of unintended release or misuse as well as measures for disposal and treatment

Maize is not an invasive plant because it is a weak competitor outside cultivation. For this reason, volunteer maize is not found in non-crop situations, for example, in fence or hedgerows, ditches, and road sides. In the event that any grain were disseminated outside the agronomic environment, therefore, it would be highly unlikely to pose any threat to the environment. In the unlikely event of establishment, volunteer plants could be easily controlled by currently available selective herbicides or by mechanical means. Since NK603 maize was established to be equivalent to traditional maize with respect to its persistence, invasiveness, dissemination and survival characteristics, the potential for unintended release of NK603 maize is no different from traditional maize. Therefore no specific measures are recommended in case of unintended release of NK603 Roundup Ready maize.

Misuse of NK603 maize is unlikely, as the proposed uses for this maize include all the current uses of traditional maize.

The measures for waste disposal and treatment for Roundup Ready maize products are the same as those for other maize products.

B. NATURE OF THE GMHP CONTAINED IN THE PRODUCT

INFORMATION RELATING TO THE RECIPIENT OR (WHERE APPROPRIATE) PARENTAL PLANTS

8. Complete name

(a) Family name   Gramineae
(b) Genus   *Zea*
(c) Species   *mays* (2n = 20)
(d) Subspecies   Not applicable
(e) Cultivar/breeding line   NK603 Roundup Ready maize
(f) Common name   Maize; Corn

9.(a) Information concerning reproduction

(i) Mode(s) of reproduction

Maize (*Zea mays)* reproduces sexually, is a wind-pollinated, monoecious species with separate staminate (tassels) and pistillate (silk) flowers, which encourages natural pollination between maize plants. Wind movements across the maize field cause pollen from the tassel to fall on the silks of the same or adjoining plants. Self-pollination leads to homogeneity of the genetic characteristics within a single plant while cross-pollination combines the genetic traits of many plants.

(ii) Specific factors affecting reproduction, if any

Tasselling, silking, and pollination are the most critical stages of maize development and, consequently, grain yield may ultimately be greatly impacted by moisture and fertility stress. Under conditions of high temperature and desiccation, maize pollen viability is measured in minutes; these conditions may even destroy the tassel before any viable pollen is shed. More moderate conditions can extend the field life of pollen to hours.

(iii) Generation time

Maize is an annual crop with a cultural cycle ranging from as short as 60 to 70 days to as long as 43 to 48 weeks from seedling emergence to maturity.

9.(b) Sexual compatibility with other cultivated or wild plant species

Out-crossing with cultivated *Zea* varieties

In Europe, the potential for genetic transfer and exchange with other organisms is limited to other maize plants. Maize is wind pollinated, and the distance that viable pollen can travel depends on prevailing wind patterns, humidity, and temperature. All maize will inter-pollinate, except for certain popcorn varieties and hybrids that have one of the gametophyte factors (Ga^S, Ga, and ga allelic series on chromosome 4). Maize pollen, therefore, moves freely within an area, lands on silks of the same variety or different varieties, germinates almost immediately after pollination, and within 24 hours completes fertilisation.

Out-crossing with wild *Zea* species

Wild *Zea* species are not present in Europe.

Annual teosinte (*Zea mays* ssp. *Mexicana*, formerly *Euchlaena mexicana*) (2n = 20) and maize (*Zea mays L.*) (2n = 20) are wind pollinated, tend to out-cross, and are highly variable, interfertile subspecies. A frequency of one F1 hybrid (maize x teosinte) for every 500 maize plants or 20 to 50 teosinte plants in the Chalco region of the Valley of Mexico was reported. Out-crossing and gene exchange between teosinte and maize occur freely, and, accompanied by selection, teosinte had a significant role in the evolution of maize. Teosinte, however, is not present in either Europe or the U.S.A. "Corn Belt". The natural distribution of teosinte is limited to the seasonally dry, subtropical zone with summer rain along the western escarpment of Mexico and Guatemala and the Central Plateau of Mexico.

Tripsacum species are perennials and seem to be more closely related to the genus *Manisuris* than to either maize or teosinte. Sixteen species of *Tripsacum* have been described. *Tripsacum floridanum* is native to southern tip of Florida, U.S.A. Twelve of sixteen *Tripsacum* species are native to Mexico and Guatemala. *Tripsacum australe* and two other species are native to South America. The centre of variation for *Tripsacum* is the western slopes of Mexico, the same area where teosinte is frequently found. In contrast to maize and teosinte, which can be easily hybridised both in the wild and by controlled pollination, special techniques are required to hybridise maize and *Tripsacum*. Except for *Tripsacum floridanum*, it is difficult to cross *Tripsacum* with maize, and the offspring of the cross show varying levels of sterility. *Tripsacum*-maize hybrids have not been observed in the field and *Tripsacum*-teosinte hybrids have not been produced.

10. Survivability

(a) Ability to form structures for survival or dormancy

Maize is an annual crop and seeds are the only survival structures. Natural regeneration from vegetative tissue is not known to occur. Modern maize cannot survive as a weed. Volunteer maize is not found growing in fence rows, ditches, and road sides as a weed. Although maize from the previous crop year can over-winter in mild winter conditions and germinate the following year, it cannot persist as a weed. The appearance of maize in rotational fields following the maize crop from the previous year is usually rare under European conditions. Maize volunteers are killed by frost or easily controlled

by current agronomic practices including cultivation and the use of selective herbicides.

(b) Specific factors affecting survivability, if any

Maize cannot survive without human assistance and is not capable of surviving as a weed due to past selection in its evolution. In contrast to weedy plants, maize has a polystichous female inflorescence (ear) on a stiff central spike (cob) enclosed in husks (modified leaves). Consequently, seed dispersal of individual kernels naturally does not occur because of the structure of the ears of maize.

Maize grain survival is dependent upon temperature, moisture of seed, genotype, husk protection and stage of development. Freezing temperatures have an adverse effect on maize seed germination. Temperatures above 45°C have also been reported as injurious to maize seed viability.

11. Dissemination

(a) Ways and extent of dissemination

Maize is an annual crop and seeds are the only survival structures. Natural regeneration from vegetative tissue is not known to occur. Seed dissemination is impacted by mechanical harvesting and transport as well as insect or wind damage, which may cause some mature ears to fall to the ground and avoid harvest. Pollen dispersal is influenced by wind and weather conditions.

(b) Specific factors affecting dissemination, if any

In contrast to weedy plants, maize has a polystichous female inflorescence (ear) on a stiff central spike (cob) enclosed in husks (modified leaves). Consequently, seed dispersal of individual kernels does not occur naturally because of the structure of the ears of maize. Seed dissemination is impacted by mechanical harvesting and transport as well as insect or wind damage, all of which may cause some mature ears to fall to the ground, where they could remain un-harvested.

Genetic material can be disseminated by pollen movement. Pollen dispersal is influenced by wind and weather conditions. Measuring about 0.1 mm in diameter, maize pollen is the largest of any pollen normally disseminated by wind from a comparably low level of elevation. Dispersal of maize pollen is influenced by its large size and rapid settling rate.

12. Geographical distribution of the plant

Maize, because of its many divergent types, is grown over a wide range of climatic conditions. The bulk of the maize is produced between latitudes 30° and 55°, with relatively little grown at latitudes higher than 47° latitude anywhere in the world. The greatest maize production occurs where the warmest month isotherms range between 21 and 27° C and the freeze-free season lasts 120 to 180 days. A summer rainfall of 15 cm is approximately the lower limit for maize production without irrigation.

13. In the case of plant species not normally grown in the Member State(s), description of the natural habitat of the plant, including information on natural predators, parasites, competitors and symbionts

Maize is widely grown in the European Union and represents a significant portion of global maize production. Significant areas of maize production in Europe include the Danube Basin from southwest Germany to the Black Sea along with southern France through the Po Valley of northern Italy.

14. Potentially significant interactions of the plant with other organisms in the ecosystem where it is usually grown, including information on toxic effects on humans, animals and other organisms

There are no known toxic effects of the maize plant to humans, animals or livestock; it has a history of safe use for human food and animal feed. However, maize is known to interact with other organisms in the environment including insects, birds, and mammals. It is susceptible to a range of fungal diseases and nematode, insect and mite pests. (See also question *31.*)

15. Phenotypic and genetic traits

Maize (*Zea mays)* is a wind-pollinated, monoecious species with separate staminate (tassels) and pistillate (silk) flowers, which encourages the natural outcrossing between maize plants. Self-pollination leads to homogeneity of the genetic characteristics within a single plant while cross-pollination combines the genetic traits of many plants. This inbred-hybrid concept and resulting yield response is the basis of the modern seed maize industry.

INFORMATION RELATING TO THE GENETIC MODIFICATION

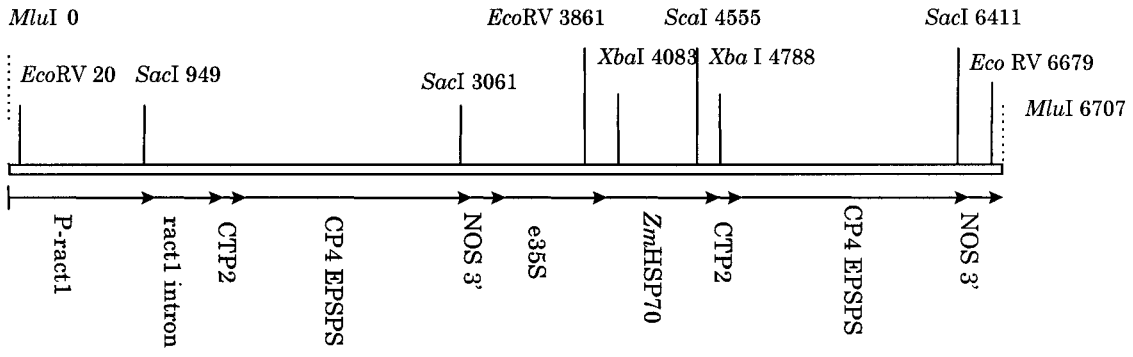
16. Description of the methods used for the genetic modification

NK603 Roundup Ready maize was modified by incorporation of a restriction fragment of plasmid DNA, designated as PV-ZMGT32L (see question *17*, Figure 1), into the maize genome using a particle acceleration method.

17. Nature and source of the vector used

NK603 Roundup Ready maize was generated using a particle acceleration transformation system and a gel-isolated *Mlu*I fragment, PV-ZMGT32L (Figure 1), containing a 5-enolpyruvylshikimate-3-phosphate synthase (EPSPS) gene from *Agrobacterium* sp. strain CP4 (CP4 EPSPS). The *cp4 epsps* gene encodes a tolerant form of EPSPS, which confers glyphosate (Roundup) tolerance to the plant.

Figure 1. Linear map of PV-ZMGT32L

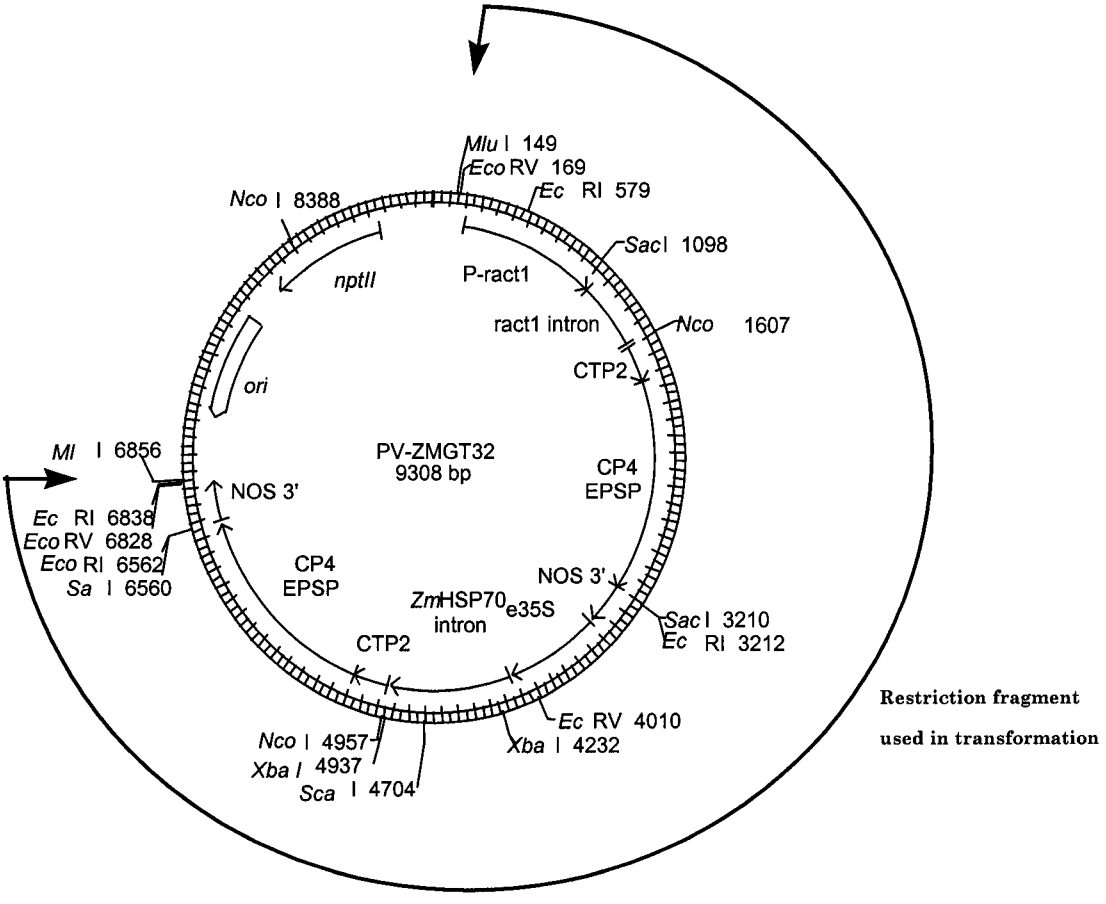


The DNA fragment PV-ZMGT32L was used to generate NK603 Roundup Ready maize by particle acceleration technology. The dashed lines represent the remaining *Mlu*I sites following digestion of PV-ZMGT32.

The plant expression plasmid vector, PV-ZMGT32 (Figure 2), was developed by Monsanto Company, St. Louis, Missouri and contains two adjacent plant gene expression cassettes each containing a single copy of the *cp4 epsps* gene. The vector also contains an *nptII* selectable marker gene, which allows selection of bacteria containing the plasmid, and an origin of replication (*ori*) necessary for replicating the plasmid in *Escherichia coli.*

The agarose gel-isolated *Mlu*I restriction fragment of plasmid vector, PV-ZMGT32L, which was utilized for transformation of NK603 Roundup Ready maize, contains only the CP4 EPSPS plant gene expression cassettes and does not contain the *nptII* selectable marker gene or origin of replication (Figure 1).

Figure 2. Plasmid map of PV-ZMGT32



The plasmid PV-ZMGT32 was used to prepare the *Mlu*I fragment used in the transformation of NK603 maize by excision and discarding of the origin of replication *(ori)* and antibiotic resistance marker *(nptII)* sequences.

18. Size, source [name of donor organism(s)] and intended function of each constituent fragment of the region intended for insertion

All genetic constituents within plasmid vector PV-ZMGT32 are completely known including the gene of interest, *cp4 epsps*, and its function. The size, source and function of the genetic elements present in the plasmid vector PV-ZMGT32 are given in Table 2. The agarose gel-isolated *Mlu*I restriction fragment of the plasmid vector, PV-ZMGT32L, utilized for transformation of NK603 Roundup Ready maize, contains only the CP4 EPSPS plant gene expression cassettes and does not contain the *nptII* selectable marker gene or origin of replication.

In NK603 Roundup Ready maize, the *e35S* promoter utilised in the first plant gene expression cassette, as derived from cauliflower mosaic virus (CaMV), is well characterised. The safety of the *e35S* promoter is well established and does not impart a pathogenic response. The sequence for *epsps* utilised in both cassettes was isolated from *Agrobacterium* sp. strain CP4, while the *NOS 3'* terminator is a 3' non-translated region of the nopaline synthase gene derived from the Ti plasmid of *Agrobacterium tumefaciens*. There is no human or animal pathogenicity known from *Agrobacterium* species, nor is the *cp4 epsps* or *NOS 3'* sequence a determinant of *Agrobacterium* plant pathogenesis.

Table 2. Summary of DNA components of the plasmid PV-ZMGT32

Genetic Element	Source	Size (kb)	Function
Genetic elements present in the *Mlu*I restriction fragment, designated PV-ZMGT32L, used for transformation:			
***cp4 epsps* gene cassette (1)**			
P-ract1/ ract1 intron	*Oryza sativa*	1.4	5' region of the rice actin 1 gene containing the promoter, transcription start site and first intron.
ctp 2	*Arabidopsis thaliana*	0.2	DNA sequence for chloroplast transit peptide, isolated from *Arabidopsis thaliana* EPSPS, present to direct the CP4 EPSPS protein to the chloroplast, the site of aromatic amino acid synthesis.
cp4 epsps	*Agrobacterium* sp. strain CP4	1.4	The DNA sequence for CP4 EPSPS, isolated from *Agrobacterium* sp. strain CP4, which imparts tolerance to glyphosate.
NOS 3'	*Agrobacterium tumefaciens*	0.3	A 3' nontranslated region of the nopaline synthase gene from *Agrobacterium tumefaciens* T-DNA which ends transcription and directs polyadenylation of the mRNA.
***cp4 epsps* gene cassette (2)**			
e35S	*Cauliflower mosaic virus*	0.6	The cauliflower mosaic virus (CaMV) promoter with the duplicated enhancer region.
Zmhsp70	*Zea mays L.*	0.8	Intron from the corn *hsp70* gene (heat-shock protein) present to stabilize the level of gene transcription.
ctp 2	*Arabidopsis thaliana*	0.2	DNA sequence for chloroplast transit peptide, isolated from *Arabidopsis thaliana* EPSPS, present to direct the CP4 EPSPS protein to the chloroplast, the site of aromatic amino acid synthesis.
cp4 epsps	*Agrobacterium* sp. strain CP4	1.4	The DNA sequence for CP4 EPSPS, isolated from *Agrobacterium* sp. strain CP4, which imparts tolerance to glyphosate.
NOS 3'	*Agrobacterium tumefaciens*	0.3	A 3' nontranslated region of the nopaline synthase gene from *Agrobacterium tumefaciens* T-DNA which ends transcription and directs polyadenylation of the mRNA.
Genetic Element	**Source**	**Size (kb)**	**Function**
Genetic elements present in the PV-ZMGT32 plasmid backbone, but not present in the *Mlu*I restriction fragment (PV-ZGMT32L) used for transformation:			
ori	*Escherichia coli*	0.65	The origin of replication from the *E. coli* high copy plasmid pUC119.
nptII	*Transposon Tn5*	0.8	The gene for the enzyme neomycin phosphotransferase type II. This enzyme confers resistance to certain aminoglycoside antibiotics and thereby allows for selection of bacteria containing the plasmid.

The *P-ract* promoter and intron, *Zmhsp70* intron and *ctp2* inserted genetic elements are derived from common plant species including rice, maize and *Arabidopsis*.

In conclusion none of the inserted sequences are known to have any pathogenic or harmful characteristics.

INFORMATION RELATING THE GMHP

19. Description of the trait(s) and characteristics, which have been introduced or modified

The expression of CP4 EPSPS proteins in NK603 Roundup Ready maize plants imparts tolerance to glyphosate (N-phosphonomethyl-glycine), the active ingredient in the non-selective, foliar-applied, broad-spectrum, post-emergent herbicide Roundup.

EPSPS is an enzyme involved in the shikimic acid pathway for aromatic amino acid biosynthesis in plants and micro-organisms. CP4 EPSPS enzymes have been shown to have significantly reduced affinity for glyphosate when compared with the wild-type maize enzyme, and to retain catalytic activity in the presence of the inhibitor glyphosate. Therefore, when maize plants expressing the CP4 EPSPS proteins are treated with glyphosate, the plants are unaffected since the continued action of the tolerant CP4 EPSPS enzymes provides for the plant's need for aromatic amino acids. The use of maize plants containing the Roundup Ready genes for maize production enables the farmer to utilise Roundup herbicide for effective control of weeds during the growing season and to take advantage of the favourable environmental and safety characteristics of Roundup.

20. Information on the sequences actually inserted/deleted/modified

(a) Size and structure of the insert and methods used for its characterisation, including information on any parts of the vector introduced in the GMHP or any carrier or foreign DNA remaining in the GMHP

NK603 Roundup Ready maize was modified by incorporation of a restriction fragment of plasmid DNA, designated as PV-ZMGT32L (see question ***17***, Figure 1), which contains two *cp4 epsps* gene cassettes, into the maize genome using a particle acceleration method.

Molecular analysis was performed to characterise the inserted DNA in NK603 maize, using Southern blot analysis to determine the insert number (number of integration sites within the maize genome), the copy number (the number of integrated linear DNA fragments used for transformation within one insertion site), the integrity of the inserted promoters, coding regions, and polyadenylation sequences, and the presence or absence of the plasmid backbone sequence. Polymerase chain reaction (PCR) analysis and DNA sequencing were performed to verify the sequences of the insert and the flanking regions.

Data from the analyses support the following conclusions:

1. the genome of NK603 maize contains a single insertion of the integrated DNA;
2. adjacent to the insert is a 217 bp fragment of the rice actin promoter and 305 bp with homology to chloroplast DNA;
3. the insert comprises each of the elements present in PV-ZMGT32L (Figure 1) with the second of the two *cp4 epsps* coding regions exhibiting a base-pair substition that results in a single amino acid change in the expressed protein;
4. the genome of NK603 maize does not contain any detectable plasmid backbone DNA and does not contain the *ori* or the *nptII* coding sequences;
5. PCR amplification and DNA sequencing confirmed the characterisation of the 5' and 3' ends of the insert and confirmed also that the sequences flanking the insert are native to the maize genome.

(b) In case of deletion, size and function of the deleted region(s)

Not applicable.

(c) Location of the insert in the plant cells (integrated in the chromosome, chloroplast, mitochondrion, or maintained in a non-integrated form), and methods for its determination

NK603 contains a single insertion of the integrated DNA which is stably integrated into the plant nuclear genome (please see also question ***20.*(a)**).

(d) Copy number and genetic stability of the insert

NK603 contains a single insertion of the integrated DNA, which is inherited as a single dominant gene in a Mendelian fashion. This has been confirmed by inheritance patterns and Southern blot analysis.

NK603 Roundup Ready maize has demonstrated stability in inbred lines and as hybrids. Chi square analyses of the segregation data of NK603 maize is consistent with a single active site of insertion of the *cp4 epsps* genes into the genomic DNA, segregating according to Mendelian genetics. This is consistent with the molecular characterisation results.

(e) In case of modifications other than insertion or deletion, describe function of the modified genetic material before and after the modification as well as direct changes in expression of genes as a result of the modification

Not applicable.

21. Information on the expression of the insert

(a) Information on the expression of the insert and methods used for its characterisation

The levels of CP4 EPSPS proteins estimated in maize forage and grain samples for NK603 Roundup Ready maize are summarised below. The values given hereafter represent the sum of both CP4 EPSPS and

CP4 EPSPS L214P[2], as the ELISA analytical method recognizes both these proteins expressed in NK603.

Mean levels of CP4 EPSPS proteins in NK603 forage were comparable for the non-replicated sites (25.5 µg/g fw) and replicated sites (25.9 µg/g fw). Levels of CP4 EPSPS proteins in control forage were, as expected, below the limit of quantitation (LOQ) of the assay (< 0.05 µg/g fw). Mean levels of CP4 EPSPS proteins in NK603 grain were comparable for the non-replicated sites (11.0 µg/g fw) and replicated sites (10.6 µg/g fw). Levels of CP4 EPSPS proteins in control grain were, as expected, below the LOQ of the assay (< 0.09 µg/g fw). The CP4 EPSPS proteins introduced into NK603 Roundup Ready maize are expressed at approximately the same levels within site or across geographically dispersed sites. This low level of CP4 EPSPS protein expression in NK603 maize is sufficient to confer tolerance to glyphosate, the active ingredient in Roundup herbicide.

(b) Parts of the plant where the insert is expressed (e.g. roots, stem, pollen, etc.)

The expression of the CP4 EPSPS is expected to occur throughout the whole plant since the rice actin and CaMV *e35S* promoters have been shown to drive constitutive expression of the encoded protein in genetically modified maize.

22. Information on how the GMHP differs from the recipient plant in

(a) Mode(s) and/or rate of reproduction

NK603 Roundup Ready maize has been field tested in the U.S.A. since 1997 and in the E.U. since 1999. Agronomic data collected from these trials such as vigour, disease, and insect susceptibility have demonstrated that NK603 maize has not been altered in survival, multiplication or dissemination characteristics when compared to traditional maize varieties. The introduced trait for herbicide tolerance has no influence on maize reproductive morphology and hence no changes in seed dissemination would be expected. Likewise, observations of the conventionally derived NK603 maize product have shown no phenotypic differences, except for tolerance to Roundup herbicide, when compared to controls or other maize varieties.

(b) Dissemination

Please see question ***22.*(a)**.

(c) Survivability

Please see question ***22.*(a)**.

(d) Other differences

Please see question ***22.*(a)**.

[2] The substitution of leucine by proline in the CP4 EPSPS encoded by the second *cp4 epsps* gene is indicated by the suffix L214P.

23. Potential for transfer of genetic material from the GMHP to other organisms

NK603 maize, like all other maize, is not sexually compatible with any indigenous or introduced wild plant species present in Europe. Therefore there is no potential for gene transfer from NK603 maize to wild plant species. In the event of plants of NK603 maize fertilising a neighbouring maize crop, the traits present in NK603 maize could be transferred to the recipient maize crop, including the introduced glyphosate-tolerance trait, and would be expressed in the progeny of the recipient crop. Since the majority of maize pollen is largely confined to short distances from the source plant, the likelihood of transfer of the glyphosate-tolerance trait to neighbouring maize crops through cross-pollination is low. Transfer of the glyphosate-tolerance gene to other maize, would, in any event, have negligible consequences for the environment. Therefore, the risk posed by this potential transfer, and hence by NK603 maize, is negligible.

24. Information on any harmful effects on human health and the environment, arising from the genetic modification

The assessment of the human and animal health safety of NK603 maize was conducted based upon comparison of NK603 maize with its traditional, nontransgenic counterpart and extensive characterisation of the introduced trait.

The introduced trait

EPSPS enzymes are commonly found in a wide variety of food sources, which have a long history of safe use. There were no indications of acute toxicity in mice administered CP4 EPSPS protein by oral gavage. This lack of toxicity was expected based on the rapid degradation of the CP4 EPSPS proteins and loss of enzymatic activity in simulated human gastric and intestinal fluids. In addition, the CP4 EPSPS proteins are not homologous to known protein toxins or allergens and are present at very low levels in NK603 Roundup Ready maize. Furthermore, these proteins are from a family of proteins with a long history of safe consumption, including the CP4 EPSPS protein present in Roundup Ready soybean.

Compositional analysis

Compositional analyses were conducted on representative maize tissues produced in U.S.A. trials at replicated and non-replicated field sites. Grain and forage samples of NK603 maize (treated with Roundup herbicide) and the non-genetically modified parental control line were collected.

Fifty-one different compositional components were evaluated for NK603 Roundup Ready maize as part of the safety and nutritional assessment of this product. Components included proximates (protein, total fat, ash, carbohydrates and moisture), acid detergent fibre, neutral detergent fibre, amino acids; fatty acids, minerals (calcium, phosphorus, magnesium, potassium, copper, iron, manganese and zinc), phytic acid, trypsin inhibitor and vitamin E.

In conclusion, compositional analyses of grain and forage demonstrate that NK603 Roundup Ready maize is compositionally and nutritionally equivalent to traditional maize.

Feeding studies

The absence of biologically relevant differences in growth, feed efficiency and carcass measurements in a broiler chicken study, when compared with nontransgenic counterpart of NK603 maize and nontransgenic commercial lines, confirms the compositional and nutritional equivalence of NK603 maize. This study also confirms the absence of any pleiotropic or unintended effects of the introduced sequences and proteins, in this sensitive experimental model, as well as the absence of toxicity of the introduced proteins following 42 days of repeated administration during the chickens' rapid growth phase.

The absence of any NK603-related toxicity in a 90-day repeated-dose rat feeding study provides further confirmation of the safety of both NK603 maize and all of the constituents of NK603 maize, including the CP4 EPSPS proteins found at low levels in NK603 maize grain. Feeding the whole food, when this is possible and scientifically acceptable, is more relevant to actual human exposure since proteins are present in the matrix of the whole food.

Conclusion

On the basis of the extensive characterisation of the introduced trait, the history of safe use of the EPSPS family of proteins and the host plant, maize, the compositional and nutritional equivalence of NK603 maize, and the absence of effects on growth performance and toxicity in animal feeding studies, it is concluded that maize grain containing the NK603 insert is as safe and nutritious as traditional maize hybrids.

25. Information on the safety of the GMHP to animal health, where the GMHP is intended to be used in animal feedstuffs, if different from that of the recipient/parental organism(s)

There is no difference between event NK603 maize and the recipient organism in terms of safety to animals (see question ***24***).

26. Mechanism of interaction between the GMHP and target organisms (if applicable), if different from that of the recipient/parental organism(s)

NK603 maize is herbicide tolerant and, as such, has no target organisms with which to interact, either directly or indirectly.

27. Potentially significant interactions with non-target organisms, if different from the recipient or parental organism(s)

Cultivated maize is known to interact with a range of organisms in the environment, including microorganisms, wildlife and numerous soil dwelling and foliar dwelling invertebrates. In addition, maize is known to be susceptible to a range of fungal diseases and nematode, insect and mite pests, which the grower traditionally has attempted to control by the application of plant protection products or by means of other agricultural practices such as crop rotation. Because maize is a good source of nutrition, interactions with vertebrate wildlife are well known, including birds and mammals that reside or forage near to or in the agricultural habitat and its field edges, hedgerows or ditches. As NK603 maize was shown to be equivalent to traditional maize, except for the introduced glyphosate-tolerance trait, its baseline interaction with other organisms in the environment is not different from traditional

nontransgenic maize, except for the additional direct exposure of herbivorous pests of maize to the CP4 EPSPS proteins that are newly expressed in the plant. Through trophic transfer and decomposition processes, additional organisms such as predators and prey of the pests of maize could be exposed to some very low levels of these proteins. (See also question *31.*)

28. Description of detection and identification techniques for the GMHP, to distinguish it from the recipient or parental organism(s)

NK603 maize will be detectable using the event-specific PCR method for detecting the introduced DNA present in NK603 maize. This method has been provided to the Rapporteur Competent Authority as part of the notification of NK603 maize. The CP4 EPSPS proteins present in NK603 maize may also be detected by an appropriate ELISA method.

INFORMATION ON THE POTENTIAL ENVIRONMENTAL IMPACT FROM THE RELEASE OF THE GMHP

29. Potential environmental impact from the release or the placing on the market of GMOs (Annex II, D2 of Directive 2001/18/EC), if different from a similar release or placing on the market of the recipient or parental organism(s)

Analysis of the characteristics of NK603 maize has shown that the likelihood of potential adverse effects on human health and the environment in the European Union, resulting from its import and use as any other maize, including the cultivation of NK603 maize varieties and the use of this maize in animal feed, is consistently negligible. Therefore, the overall environmental risk posed by the GMHP is also negligible, and strategies for risk management for NK603 maize would be the same as for traditional maize.

It is actually expected that the production of Roundup Ready maize will positively impact current agronomic practices in maize and provide benefits to farmers and the environment. The use of Roundup in maize enables the farmer to take advantage of the herbicide's favourable environmental and safety properties. NK603 Roundup Ready maize benefits the farmer by providing (1) an additional broad-spectrum weed control option in maize, (2) a new herbicidal mode of action for in-season maize weed control, (3) increased flexibility to treat weeds on an "as needed" basis, (4) cost-effective weed control and (5) an excellent fit with reduced-tillage systems. In turn, a number of environmental benefits arise from the use of conservation tillage including improved soil quality, improved water infiltration, reductions in erosion and sedimentation of water resources, reduced runoff of nutrients and pesticides to surface water, improved wildlife habitat, increased carbon retention in the soil, reduced fuel use and encouragement of sustainable agricultural practices.

Roundup herbicide has a very favourable environmental and health and safety profile. Glyphosate, the active ingredient in Roundup herbicide (1) has limited mobility as it binds rapidly and tightly to a wide variety of soils and sediments, (2) is non-persistent as it is readily metabolised, (3) has a low potential to move into surface or groundwater and (4) does not accumulate in and presents minimal risk to terrestrial and aquatic animals including birds, mammals, fish and invertebrates.

30. Potential environmental impact of the interaction between the GMHP and target organisms (if applicable), if different from that of the recipient or parental organism(s)

NK603 maize is herbicide tolerant and, as such, has no target organisms with which to interact, either directly or indirectly.

31. Possible environmental impact resulting from potential interactions with non-target organisms, if different from that of the recipient or parental organism(s)

(a) Effects on biodiversity in the area of cultivation

Cultivated maize interacts with a range of organisms in the area of cultivation, including pathogens, micro-organisms, vertebrate wildlife and numerous soil dwelling and foliar dwelling invertebrates. As NK603 maize was shown to be equivalent to traditional maize, except for the introduced glyphosate-tolerance trait, its baseline interaction with these organisms is considered no different from traditional nontransgenic maize, except for the potential additional exposure of herbivorous pests of maize to the CP4 EPSPS proteins that are newly expressed in the plant. Through trophic transfer and decomposition processes, additional organisms in the field such as predators and prey of the pests of maize could theoretically be exposed to some very low levels of these proteins.

CP4 EPSPS proteins expressed in NK603 maize belong to the larger family of EPSPS enzymes, which are ubiquitous in bacteria, fungi, algae and plants. Therefore, there is no *a priori* reason to suspect that *any* EPSPS protein, including the CP4 EPSPS protein derived from the soil-borne bacterium *Agrobacterium* sp. strain CP4, would possess biological activity towards non-target organisms. Any non-target organisms interacting with the crop have co-evolved in close interaction with a wide spectrum of green plants and microorganisms, and therefore have *historically* been exposed to members of this safe class of proteins. Numerous field trials have confirmed that the susceptibility of NK603 maize to insect pests or fungal diseases is no different from that of traditional maize varieties. These results are indicative of the fact that the interaction between this maize and non-target organisms is not different from traditional maize. In addition, no evidence has been brought forward by the many farmers who have grown NK603 maize since 2001 (or other Roundup Ready products that express CP4 EPSPS proteins since 1996) of any harmful or undesirable effects on non-target organisms.

In conclusion, no adverse effects on non-target organisms or indirect population effects on depending organisms are expected as a result from the import or use of this maize as any other maize, including the cultivation of NK603 varieties.

(b) Effects on biodiversity in other habitats

Like traditional maize, NK603 maize is a poor competitor and is non-invasive of natural environments. Therefore, the potential of this maize to cause adverse effects to wild plants in surrounding habitats, *e.g.* through competition for natural resources, is negligible. Maize can also interact with animals in habitats surrounding the crop. For instance, as maize is a good source of nutrition, interactions with vertebrate wildlife are well known. However, as NK603 maize is substantially equivalent to traditional maize, except for the

introduced glyphosate-tolerance trait, its baseline interactions with these organisms will not be different from traditional maize, except for the potential additional exposure to the expressed CP4 EPSPS proteins. The CP4 EPSPS proteins are members of a well-known family of proteins that are ubiquitous in plants, algae, fungi and bacteria. There is no known toxicity associated with this family of proteins, which has been confirmed in toxicity tests and nutritional evaluations. The results of these tests indicate that NK603 maize or the expressed CP4 EPSPS proteins have negligible potential to cause any immediate or delayed adverse effects in vertebrates or invertebrates that are interacting with or even foraging on NK603 maize plants in the field. In the absence of potential direct adverse effects on pathogens, wild plants, invertebrates and vertebrates, no indirect population effects are to be expected in any other species that would predate on, interact with or otherwise depend on these organisms in the receiving environment.

It is concluded, therefore, that the likelihood of potential direct or indirect adverse effects in non-target organisms coming into contact with NK603 maize is negligible, and the risk posed by NK603 maize, therefore, is also negligible.

(c) Effects on pollinators

Please see questions ***31.*(a)** and ***31.*(b)**.

(d) Effects on endangered species

Please see questions ***31.*(a)** and ***31.*(b)**.

C. *INFORMATION RELATED TO PREVIOUS RELEASES*

32. History of previous releases notified under Part B of the Directive 2001/18/EC and under Part B of Directive 90/220/EEC by the same notifier

(a) Notification number

NK603 Roundup Ready maize has been planted in the European Union for field-testing (agronomic performance, efficacy, selectivity, yield assessment, substantial equivalence, glyphosate residue trials), compositional analysis and breeding purposes since 1999.

Part B notification numbers for trial permits obtained in Belgium, France, Germany, Italy and Spain are given in Table 1 (please see question *4.*).

(b) Conclusions of post-release monitoring

The conclusions of the E.U. field trials with NK603 Roundup Ready maize which were conducted to date, relate to the assessment of agronomic performance, herbicide efficacy and selectivity, yield potential, residues determination, compositional analysis and breeding. Trials were conducted in the principal growing areas of the European Union. Post-release surveillance provided no significant evidence that NK603 maize and its progeny are likely to cause any adverse effects to human or animal health or to the environment.

(c) Results of the release in respect to any risk to human health and the environment (submitted to the Competent Authority according to Article 10 of Directive 2001/18/EC)

Post-release general surveillance from environments inside and outside the E.U. provided no significant evidence that NK603 maize and its progeny are likely to pose any risk of adverse effects to human or animal health or to the environment.

33. History of previous releases carried out inside or outside the Community by the same notifier

(a) Release country

NK603 maize has been planted for field-testing and/or breeding purposes at several locations in the E.U. since 1999 (see question *32*) and at many more locations in the U.S.A. since 1997.

In the U.S.A., Monsanto Company has submitted a petition for determination from the United States Department of Agriculture (USDA) under the Animal and Plant Health Inspection Service (APHIS) regulations 7 CFR part 340 that NK603 Roundup Ready maize and all progenies derived from crosses between these lines and other maize varieties should no longer be considered as regulated articles. Similarly, Monsanto as a part of its ongoing consultation process with the United States FDA has provided the agency with a summary of the food and feed safety of NK603 maize. The deregulated status for NK603 maize was granted by the United States Department of Agriculture (USDA) on 29 September 2000, and subsequently NK603 maize was commercialised in the U.S.A.

In 2003, NK603 maize is already registered in several world areas outside the

E.U., including the U.S.A., Japan, Canada and Bulgaria for cultivation, and in Mexico, Australia and Russia for import of grain for food purposes.

(b) Authority overseeing the release

Belgium:	Ministry of Agriculture
Canada:	Canadian Food Inspection Agency; Health Canada
France:	Ministry of Agriculture
Germany:	Robert Koch Institut
Italy:	Ministry of Health
Japan:	Ministry of Forestry and Fisheries; Ministry of Health and Welfare
Spain:	Ministry of Environment
U.S.A.:	United States Department of Agriculture and Environmental Protection Agency

(c) Release site

In the European Union NK603 maize was released for field-testing at several locations in Belgium, France, Germany, Italy and Spain since 1999.

Prior to the approval of NK603 in the US.A., in September 2000 and its subsequent commercialisation, this maize has been planted for field testing at various sites in the U.S.A. since 1997.

(d) Aim of the release

In the E.U. NK603 maize has been released for field-testing of agronomic performance (efficacy, selectivity, yield assessment), breeding purposes, residues determination, testing of agronomic equivalence and for compositional analysis. In addition to the above-mentioned purposes of experminetal release, field tests in the U.S.A. were also carried out to study protein expression and for generating the necessary grain material for the conduct of safety and feeding studies with NK603 maize.

Since 2001, NK603 maize has been commercially grown in the U.S.A. and Canada.

(e) Duration of the release

Please see question ***33.*****(a)**.

(f) Aim of post-releases monitoring

No adverse effects of the GMHP have been identified (see question ***29***). This indicates that a requirement for case-specific post-release monitoring is not appropriate, which is consistent with approvals granted in other world areas.

NK603 maize will be commercialized alongside stewardship and surveillance programmes involving downstream stakeholders in the use of this maize, in order to ensure the implementation of good agricultural practice in its cultivation and to ensure a channel of communication in the unlikely event that unanticipated adverse effects might occur.

No such unanticipated effects have been observed since the commercialization of NK603 maize in other world areas, nor during the many years of field-

testing inside and outside the E.U.

(g) Duration of post-releases monitoring

Please see question ***33.*****(f)**.

(h) Conclusions of post-release monitoring

Please see question ***33.*****(f)**.

(i) Results of the release in respect to any risk to human health and the environment

Multi-year field-testing and post-marketing experience provided no significant evidence that grain and derived products from NK603 Roundup Ready maize and its progeny are likely to cause any adverse effects to human or animal health and the environment.

D. *INFORMATION RELATING TO THE MONITORING PLAN – IDENTIFIED TRAITS, CHARACTERISTICS AND UNCERTAINTIES RELATED TO THE GMO OR ITS INTERACTION WITH THE ENVIRONMENT THAT SHOULD BE ADDRESSED IN THE POST COMMERCIALISATION MONITORING PLAN*

1. *Case-specific monitoring*

An environmental risk assessment of NK603 Roundup Ready maize was undertaken in the context of the scope of the notification, that is, for consent for import of NK603 maize and use of this maize in the E.U. as any other maize, including the cultivation of NK603 maize varieties and the use of this maize for animal feed.

Analysis of the characteristics of NK603 maize and comparison to the experience with cultivation of traditional maize in the E.U. has shown that the risk for potential adverse effects on human health and the receiving environment, resulting from the import and use of NK603 maize in the E.U., including the cultivation of NK603 maize varieties and use thereof as any other maize, is consistently negligible relative to:

- Persistence or invasiveness
- Selective advantage
- Potential for gene transfer
- Impact on target organisms
- Impact on non-target organisms
- Persons in proximity or contact with the GMHP
- Animal health and the consumption of the GMHP
- Effects on biogeochemical processes
- Changes in agricultural practice

Therefore, the overall environmental risk posed by this genetically modified higher plant is negligible, and no specific strategies for risk management are required. Since the conclusions of this environmental risk assessment are derived from the results of scientific studies, rather than major assumptions, no case-specific post-marketing monitoring actions, typically aimed at testing assumptions made in this assessment, would be warranted or required.

2. *General surveillance*

Any potential adverse effects of the GMO on human health and the environment which were not anticipated in the e.r.a., can be addressed under the general surveillance. General surveillance is largely based on routine observation and implies the collection, scientific evaluation and reporting of reliable scientific evidence, in order to be able to identify whether unanticipated, direct or indirect, immediate or delayed adverse effects have been caused by the placing on the market of a genetically modified (GM) crop in its receiving environment. Areas of post-marketing surveillance for unanticipated effects are: the agronomic environment, the non-agronomic environment and human and livestock health.

In order to allow detection of the broadest possible scope of unanticipated adverse effects, general surveillance is performed by either selected, existing networks, or by specific company stewardship programmes, or by a combination of both. Such networks are already in place in the majority of E.U. countries and in many cases have been involved either in scientific studies and/or in field trials with GM crops. In addition, company stewardship

programmes recognise that farmers are constantly present in the receiving environment and, therefore, are well placed to ensure good stewardship in the cultivation of GM crops as well as being a valuable source of surveillance information.

The notifier will ensure that awareness of good practice in the use of GM crops is made widely available by providing key information, for example by product briefings (*e.g.* farmer and distributor meetings, briefings for agricultural extension services) and technical literature (*e.g.* product leaflets, codes of practice, toll-free telephone number). In addition, further information on products and relevant legislation will be available from a number of sources, including industry and government websites, official registers and government publications.

The main sources of surveillance information are as follows:

- *The seed supply and distribution network.*
  A continuous supply and distribution network extends from the technology provider, via intermediate distribution, to the end-user. Through their sales and technical organisations, key participants, especially those companies involved in farm sales, would be regular visitors to fields where GM crops will be cultivated. Experience has shown that this network ensures a continuous and efficient communication link from the grower to the technology provider, especially in relation to complaints about product performance, and thus would provide a key surveillance network for possible adverse effects.
- *Key external networks*
  As discussed above, the use of existing networks to provide surveillance information is seen as a key aspect of ensuring that sufficient observers are available to identify and report possible unanticipated adverse effects, as well as ensuring methodological consistency and optimising the expenditure of resources. This would include existing observation programmes in the fields of agriculture, the non-agronomic environment, occupational health and livestock welfare.

Where there is scientifically valid evidence of a potential adverse effect (whether direct or indirect), linked to the genetic modification, then further evaluation of the consequence of that effect should be science-based and compared with baseline information. Relevant baseline information will reflect prevalent agricultural practice and the associated impact of these practices on the environment. Where scientific evaluation of the observation confirms the possibility of an unanticipated adverse effect, this would be investigated further to establish a correlation, if present, between the use of the GM crop and the observed effect. The evaluation should consider the consequence of the observed effect and remedial action, if necessary, should be proportionate to the significance of the observed effect.

Monsanto will submit a General Surveillance Report containing information obtained from participating networks, and/or in case of an effect that was confirmed. If information that confirms an adverse effect which alters the existing risk assessment becomes available, Monsanto will submit a Report, consisting of a scientific evaluation of the potential adverse effect and a conclusion on the safety of the product. The report will also include, where appropriate, the measures that were taken to ensure the safety of human or livestock health and/or the environment.