

**SUMMARY OF APPLICATIONS FOR GENETICALLY MODIFIED
PLANTS AND/OR DERIVED FOOD AND FEED**

A. GENERAL INFORMATION

1. Details of application

a) Member State of application

The Netherlands

b) Application number

EFSA-GMO-NL-2005-16

c) Name of the product (commercial and other names)

This application for consent, under Regulation 1829/2003, to place on the market food and feed products of genetically modified 281-24-236/3006-210-23 cotton and progeny derived by conventional breeding, referred to as 281-24-236/3006-210-23 cotton. The proposed uses of 281-24-236/3006-210-23 cotton are the same as for any other cotton including use in human food and animal feed. A separate notification, C/NL/04/01, for the import of 281-24-236/3006-210-23 cottonseeds into the EU, in accordance with Directive 2001/18/EC, has been submitted to the Netherlands.

d) Date of acknowledgement of valid application

2. Applicant

a) Name of applicant

This is a notification submitted by Agrigenetics, Inc. d/b/a Mycogen Seeds.

b) Address of applicant

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European Development Centre
3 Milton Park, Abingdon
Oxon OX14 4RN
United Kingdom

Agrigenetics, Inc. d/b/a Mycogen Seeds
c/o Dow AgroSciences LLC
9330 Zionsville Road
Indianapolis, IN 46268-1054
U.S.A.

c) Name and address of the person established in the Community who is responsible for the placing on the market, whether it be the manufacturer, the importer or the distributor, if different from the applicant (Commission Decision 2004/204/EC Art 3(a)(ii))

Not applicable.

3. Scope of the application

- GM plants for food use
- Food containing or consisting of GM plants
- Food produced from GM plants or containing ingredients produced from GM plants
- GM plants for feed use
- Feed containing or consisting of GM plants
- Feed produced from GM plants
- Import and processing (Part C of Directive 2001/18/EC)
- Seeds and plant propagating material for cultivation in Europe (Part C of Directive 2001/18/EC)

4. Is the product being simultaneously notified within the framework of another regulation (e.g. Seed legislation)?

Yes No

If yes, specify

5. Has the GM plant been notified under Part B of Directive 2001/18/EC and/or Directive 90/220/EEC?

Yes No

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

See notification C/NL/04/01

6. Has the GM plant or derived products been previously notified for marketing in the Community under Part C of Directive 2001/18/EC or Regulation (EC) 258/97?

Yes No

If yes, specify

An application pursuant under directive 2001/18/EC – notification C/NL/04/01 – for import of 281-24-236/3006-210-23 cotton and processing excluding cultivation, was submitted in February 2004. This notification has received a favourable opinion from the Dutch rapporteur on September 2004.

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

Yes No

Yes, an application for registration of 281-24-236/3006-210-23 cotton has been submitted to the US Environment Protection Agency (EPA). Also, an application for non-regulated status of 281-24-236/3006-210-23 cotton to the US Department of Agriculture

(USDA) was submitted in January 2003, and a notification concerning foods derived from 281-24-236/3006-210-23 cotton to the US Food and Drug Administration (FDA) was submitted in March 2003. US approval granted in October 2004.

8. General description of the product

a) Name of the recipient or parental plant and the intended function of the genetic modification

Cotton *Gossypium hirsutum* is extensively cultivated and has a long history of safe use. Cottonseeds and derived products are not considered to have harmful characteristics, despite the plant producing gossypol and cyclopropenoids. The product consists of seeds derived from 281-24-236/3006-210-23 cotton, genetically modified to express Cry1F and Cry1Ac proteins, conferring resistance to certain lepidopteran insect pests under field conditions, and PAT protein, conferring tolerance to glufosinate-ammonium during the selection stages of the genetic modification.

b) Types of products planned to be placed on the market according to the authorisation applied for

281-24-236/3006-210-23 cotton and processed food and feed products will be used in a manner consistent with current uses of cotton and derived products. This will include cotton and processed food and feed products. A separate notification for the import of 281-24-236/3006-210-23 cotton into the EU, in accordance with Directive 2001/18, has been submitted to the Netherlands.

c) Intended use of the product and types of users

Products from 281-24-236/3006-210-23 cotton will be used in a manner consistent with current uses of cotton and derived products, including use of cotton in the EU for animal feed, storage, and processing into food and feed products.

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

The genetic modification in 281-24-236/3006-210-23 cotton is not expected to impact the existing processing conditions used for cotton, which are well known and have a long history of use. The safety evaluation contained in this notification for the import of 281-24-236/3006-210-23 cotton provides further verification that no specific conditions of use and handling are required for 281-24-236/3006-210-23 cotton. 281-24-236/3006-210-23 cotton products will be used, stored and handled as any other commercial cotton products.

e) Any proposed packaging requirements

The packaging, handling, and storage systems that are currently used for cotton will apply. Cotton and processed products of 281-24-236/3006-210-23 cotton will be packaged in the same manner as other cotton products.

f) Any proposed labelling requirements in addition to those required by Community law (Annex IV of Directive 2001/18/EC; Regulation 1829/2003 art. 13 and 25)

Product information to indicate that genetic modification has been used in the development of 281-24-236/3006-210-23 cotton will be provided. A proposal for labelling of 281-24-236/3006-210-23 cotton has been developed in accordance with regulation 1829/2003 art. 13 and 25. This will enable the seed and seed by-products derived from 281-24-236/3006-210-23 cotton to be labelled in accordance with above regulations, when imported to the EU.

g) Unique identifier for the GM plant (Regulation (EC) 65/2004; does not apply to applications concerning only food and feed produced from GM plants, or containing ingredients produced from GM plants)

In accordance with the OECD guidance for the designation of a unique identifier for transgenic plants (ENV/JM/MONO(2002)7), the unique identification code assigned to 281-24-236/3006-210-23 cotton is: DAS-24236-5 x DAS-21Ø23-5

h) If applicable, geographical areas within the EU to which the product is intended to be confined under the terms of the authorisation applied for. Any type of environment to which the product is unsuited

Not applicable.

9. Measures suggested by the applicant to take in case of unintended release or misuse as well as measures for disposal and treatment

Misuse of 281-24-236/3006-210-23 cotton is unlikely, as the proposed food and feed are substantially equivalent to other food and feed products derived from conventional cotton varieties. Therefore the measures of waste and disposal and treatment of 281-24-236/3006-210-23 cotton food and feed derived products are the same as those for traditional cotton varieties.

B. INFORMATION RELATING TO (A) THE RECIPIENT OR (B) (WHERE APPROPRIATE) PARENTAL PLANTS**1. Complete name**

a) *Family name:* Malvaceae

b) *Genus:* *Gossypium*

c) *Species:* *hirsutum*

d) *Subspecies:* None

e) *Cultivar/breeding line:* 281-24-236/3006-210-23 cotton

f) *Common name:* Cotton

2 a. Information concerning reproduction*(i) Mode(s) of reproduction*

Cotton is a perennial woody shrub, which is grown as an annual crop by planting it annually by seed. It reproduces sexually, is self-fertile, and generally self-pollinating. Cotton pollen is heavy and sticky and therefore not wind-borne under typical environmental conditions, thus, it is transferred by insects, such as bees, bumble- and honey- bees.

(ii) Specific factors affecting reproduction

Cotton plants will grow and be productive on a wide variety of soils. They are most productive on fertile soil under hot weather and irrigated conditions if rainfall is deficient. *Gossypium hirsutum* is generally self-pollinating, but in the presence of suitable insect pollinators allows for limited cross-pollination. Even if suitable pollinators are present, distribution of pollen decreases considerably with increasing distance.

(iii) Generation time

Cotton plants cultural cycle ranges from 120 to 200 growing days covering the period from emergence of the seedling to maturity.

2 b. Sexual compatibility with other cultivated or wild plant species

Cotton will intra-pollinate and transfer genetic material between cotton of similar genotypes. The extent of pollination will depend upon insect pollen vectors and geographical location. In addition, no genera in the Gossypeae tribe occurs naturally in the EU preventing its gene transfer to wild relatives.

3. Survivability

a) Ability to form structures for survival or dormancy

Cotton, the only survival structures of cotton plants, are not able to persist in the environment for long periods of time.

b) Specific factors affecting survivability

Cotton is not considered to be able to survive in the environment over long periods because they lack of dormancy, are not able to germinate under diverse conditions, short life cycle and high seed dispersal. In most cotton growing areas in Europe, the seeds which may remain in the soil may germinate in the autumn if conditions are right, otherwise, they are likely to rot and die. Cotton volunteers, can be easily controlled by current agronomic practices such as cultivation, and use of selective herbicides (atrazine, bromoxynil, paraquat and glyphosate).

4. Dissemination

a) Ways and extent of dissemination

Cotton dissemination occurs only by means of seeds.

b) Specific factors affecting dissemination

Environmental release is not in the scope of this application. Mechanical harvesting, wind damage, which may cause some mature bolls to fall to the ground, and transport, are ways of disseminating cottonseeds. Regardless of these routes of dissemination, commercial cotton varieties cannot survive without human assistance.

5. Geographical distribution and cultivation of the plant, including the distribution in Europe of the compatible species

Plants of the *Gossypium* genus originated in different areas of the world, with centres of diversity in Australia Southern Asia, Africa and the World. Except as a cultivated crop, they are essentially excluded from temperate climates.

6. 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

Not applicable as cotton is commercially grown in Spain and Greece.

7. Other potential interactions, relevant to the GM plant, of the plant with organisms in the ecosystem where it is usually grown, or used elsewhere, including information on toxic effects on humans, animals and other organisms

Cotton 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 insect pests, as well as competition from surrounding weeds. Cotton is extensively cultivated and has a history of safe use, however, the plant produces gossypol and cyclopropenoid fatty acids which are toxicants.

C. INFORMATION RELATING TO THE GENETIC MODIFICATION

1. Description of the methods used for the genetic modification

281-24-236/3006-210-23 cotton is a conventional cross between two transgenic lines transformed using the *Agrobacterium* method. The vectors used to transform the parental lines were PMYC3006 and pAGM281.

2. Nature and source of the vector used

Two different binary vectors were used for the genetic transformation of 281-24-236/3006-210-23 cotton parental lines 281-24-236 and 3006-210-23. As described in the notification, the intended insert of the line 281-24-236 consists of a linear T-DNA fragment, from plasmid pAGM281, containing the *cry1F* and *pat* coding sequences together with the necessary regulatory components only. The insert of the line 3006-210-23 consists of a linear T-DNA fragment, from plasmid pMYC3006, containing the *cry1Ac* and *pat* coding sequences along with the corresponding regulatory components.

3. Source (name) of donor organism(s) size and intended function of each constituent fragment of the region intended for insertion

The T-DNA of the binary vector pAGM281 contains the plant optimised coding sequences for the *cry1F* and *pat* genes, together with the necessary regulatory components to drive their expression. The *cry1F* gene (3.45 kbp; origin: *Bacillus thuringiensis* subsp. *aizawai*) is under the control of the (4ocs)DeltaMas 2' promoter (0.61 kbp; origin: *Agrobacterium tumefaciens* pTi15955) and the bi-directional ORF25PolyA terminator (0.73 kbp; origin: *Agrobacterium tumefaciens* pTi15955). The function of the Cry1F protein in 281-24-236/3006-210-23 cotton is to provide resistance against certain lepidopteran insect pests such as the European corn borer. The *pat* gene (0.55 bp; origin: *Streptomyces viridochromogenes* strain Tü494) is under the control of the UbiZm1 promoter (1.99 kbp; origin: *Zea mays*) and sharing the ORF25PolyA terminator. The function of the PAT protein in 281-24-236/3006-210-23 cotton is to confer tolerance against glufosinate-ammonium during the genetic modification.

The T-DNA of the binary vector pMYC3006 contains the plant optimised coding- and regulatory sequences to enable the expression of for the *cry1Ac* and *pat* genes. The *cry1Ac* gene (3.45 kbp; origin: *Bacillus thuringiensis* subsp. *kurstaki*) is under the control of the UbiZm1 promoter (1.99 kbp; origin: *Zea mays*) and the bi-directional ORF25PolyA terminator (0.73 kbp; origin: *Agrobacterium tumefaciens* pTi15955). The function of the Cry1Ac protein in 281-24-236/3006-210-23 cotton is to provide resistance against certain lepidopteran insect pests such as the European corn borer. The *pat* gene (0.55 kbp; origin: *Streptomyces viridochromogenes* strain Tü494) is under the control of the (4ocs)DeltaMas 2' promoter (0.61 kbp; origin: *Agrobacterium tumefaciens* pTi15955) and shares the ORF25PolyA terminator. The function of the PAT protein in 281-24-236/3006-210-23 cotton is to confer tolerance against glufosinate-ammonium during the genetic modification.

D. INFORMATION RELATING TO THE GM PLANT

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

281-24-236/3006-210-23 cotton plants express Cry1F, Cry1Ac and PAT proteins conferring resistance to certain lepidopteran insect pests under field conditions.

The *cry1F* and *cry1Ac* genes are expressed constitutively by the (4ocs)DeltaMas 2'- and UbiZm1 - promoter respectively. Expression of Cry1F and Cry1Ac proteins provides control against lepidopteran insect pest damage to the above-ground parts of the cotton plant including those parts which are beyond the reach of chemical insecticides. Specifically, the Cry1F and Cry1Ac proteins confer season-long resistance against cotton bollworm (*Helicoverpa zea*) pink bollworm (*Pectinophora gossypiella*) and tobacco budworm (*Heliothis virescens*). They also confer good control against several armyworm- and two different looper- species. The *pat* gene is also expressed constitutively conferring tolerance against glufosinate-ammonium during the genetic modification.

No other new traits have been introduced into 281-24-236/3006-210-23 cotton, in particular antibiotic resistance markers. This is confirmed by the molecular characterization, protein expression analysis, the expected agronomic performance, and comparable composition data to other conventional cotton.

2. Information on the sequences actually inserted or deleted

a) *The copy number of all detectable inserts, both complete and partial*

Southern blot analysis using genomic DNA of 281-24-236/3006-210-23 cotton were used to demonstrate the integration, copy number, and integrity of *cry1Ac*, *cry1F* and *pat* genes as well as to prove the absence of the erythromycin resistance gene, *ery^R*, in the 281-24-236/3006-210-23 cotton. Results of this study show that 281-24-236/3006-210-23 cotton contains identical Southern blot patterns as previously determined for the parental transgenic lines.

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

Not applicable.

c) *Chromosomal location(s) of insert(s) (nucleus, chloroplasts, mitochondria, or maintained in a non-integrated form), and methods for its determination*

The inserts are integrated into the cotton plant genome as confirmed in the molecular characterisation of 281-24-236/3006-210-23 cotton by detailed Southern blot analysis and DNA sequencing.

d) The organisation of the inserted genetic material at the insertion site

The actual inserts in 281-24-236/3006-210-23 cotton contain a single integration of transgenic DNA from *cry1F* and *cry1Ac* transgenes. The insert in 281-24-236 cotton contains one intact copy of the insect resistance gene *cry1F*, and one intact copy plus an additional hybridising fragment of the plant selectable marker gene *pat*. The insert in 3006-210-23 cotton contains one intact copy of the insect resistance gene *cry1Ac*, and one intact copy of the plant selectable marker gene *pat*. The data also confirm that the gene *eryR* conferring resistance to erythromycin is not present in the 281-24-236/3006-210-23 cotton.

3. Information on the expression of the insert

a) Information on developmental expression of the insert during the life cycle of the plant

Levels of expression of Cry1F, Cry1Ac and PAT proteins were evaluated in several tissue samples of 281-24-236/3006-210-23 cotton and corresponding parental lines 281-24-236 and 3006-210-23, collected from six field locations in the US during 2001. Tissue samples of cottonseed, pollen, nectar, and cottonseed-processed samples: meal and oil were analysed using ELISA methods at a limit of detection ranging from 0.001 – 0.4 ng protein/mg sample weight.

b) Parts of the plant where the insert is expressed

The Cry1F, Cry1Ac and PAT proteins are expressed across several tissues of 281-24-236/3006-210-23 cotton. Nevertheless, since the scope of this notification is to place on the market 281-24-236/3006-210-23 cotton for use as any other cotton including processing and use as food and feed, but not for environmental release, we have focused on the results of expression of Cry1F, Cry1Ac and PAT proteins in the cottonseeds only.

4. Information on how the GM plant differs from the recipient plant in

a) Reproduction

Comparisons between 24-236/3006-210-23 cotton and non-transgenic recurrent parent were made on: growth habit, field emergence, vegetative- and flowering- vigour and reproductive potential. Data collected from field trials conducted during 2001 and 2003 demonstrated no significant morphological-, growth- or developmental- differences between 281-24-236/3006-210-23 cotton and conventional varieties.

b) Dissemination

The 281-24-236/3006-210-23 cotton plants show no difference in dissemination compared to non-GM cotton. Commercial cotton varieties have been domesticated to the extent that it cannot be disseminated without human intervention.

c) Survivability

Cultivated cotton varieties have been domesticated to the extent that they can not survive outside managed agricultural environments. Lack of weediness traits prevents cottonseeds to readily survive from one growing season to the next. The genetic modification in 281-24-236/3006-210-23 cotton results in expression of Cry1F, Cry1Ac and PAT proteins conferring resistance to certain lepidopteran insect pests and expression under field conditions. The survival characteristics of 281-24-236/3006-210-23 cotton in the environment remain comparable to those of non-GM cotton.

d) Other differences

Cotton does not exhibit any weedy tendencies and is non-invasive in natural ecosystems. Based on the agronomic data, there is no evidence for altered survival, multiplication, or dissemination of 281-24-236/3006-210-23 cotton in the environment as compared to non-GM cotton. In addition, the inserted traits do not alter the phenotype of cotton in a way that would confer a fitness advantage for cotton outside managed agricultural environments.

5. Genetic stability of the insert and phenotypic stability of the GM plant

Data on the Mendelian segregation of inserted genes provide evidence of stable inheritance of the introduced genetic material. The Mendelian segregation of 281-24-236 and 3006-210-23 cotton lines was recorded and analysed.

6. Any change to the ability of the GM plant to transfer genetic material to other organisms

a) Plant to bacteria gene transfer

Transfer of transgenes originating from 281-24-236/3006-210-23 cotton to bacteria is a negligible concern. There is no known mechanism for, or definitive demonstration of, DNA transfer from plants to microbes under natural conditions. Even if horizontal gene transfer were to take place, transfer of the *cry1F*, *cry1Ac* or *pat* gene from 281-24-236/3006-210-23 cotton does not represent a risk to human or animal health nor is it of consequence as a plant pest risk. The *ery^R* gene coding for resistance to the antibiotic erythromycin is not present in 281-24-236/3006-210-23 cotton

b) Plant to plant gene transfer

The potential for gene transfer to sexually compatible plant species will be negligible because this notification is for the import of 281-24-236/3006-210-23 cotton and not for cultivation. Therefore, any release of 281-24-236/3006-210-23 cotton into the environment will be unintentional, limited and highly unlikely to have any adverse effect. If necessary, such limited release can be easily controlled by the application of current management practices used for the control of unintentional releases of cotton plants, such as the application of non-selective herbicides with the exception of glufosinate-ammonium. In any case, there are no sexually compatible wild or weedy relatives of *Gossypium hirsutum* known to exist in the EU, which eliminates the possibility of potential gene transfer to such species.

7. Information on any toxic, allergenic or other harmful effects on human or animal health arising from the GM food/feed

7.1 Comparative assessment

Choice of the comparator

The comparator chosen for the safety evaluation of 281-24-236/3006-210-23 cotton consisted of non-genetically modified cotton with comparable genetic background.

7.2 Production of material for comparative assessment

a) number of locations, growing seasons, geographical spreading and replicates

Composition studies were performed in 6 locations, including 3 replicates each, throughout the US, where cotton is commercially grown, during the 2001 and 2003 growing seasons. A summary of the methods used and the results obtained are presented below.

b) the baseline used for consideration of natural variations

Publicly available data on commercial cotton has been compiled from the literature and used as the baseline in the comparisons with 281-24-236/3006-210-23 cotton, in addition to the comparative assessment with non-GM cotton of comparable genetic background carried out in field trials.

7.3 Selection of compounds for analysis

The major identified constituents of cotton, included in composition analyses were: *proximates, minerals, amino acids, and fatty acids*. Conversely, key anti-nutrients identified in cotton, included in the composition studies were: *gossypol, cyclopropenoid fatty acids*.

7.4 Agronomic traits

This notification under Reg. (EC) No 1829/2003 does not include environmental release of 281-24-236/3006-210-23 cotton. Nevertheless, the behaviour of the 281-24-236/3006-210-23 cotton has been evaluated in field trials carried out across the US. These studies have shown 281-24-236/3006-210-23 cotton, to be significantly comparable to any other cotton plants apart from the protection to some lepidopteran pests.

7.5 Product specification

The genetically modified food and feed is obtained from 281-24-236/3006-210-23 cotton, which includes all conventional crosses between genetically modified 281-24-236/3006-210-23 cotton and other traditionally bred cotton.

7.6 Effect of the production and processing

281-24-236/3006-210-23 cotton will undergo existing production processes used for conventional cotton. No novel production process is envisaged.

7.7 Anticipated intake/extent of use

The majority of cottonseed by-products is used for animal feed or as textile fibre (cake of cottonseed, cottonseed, hulls, and lint), only cottonseed oil and linters, which account for 25% of the processed fractions, are processed, in the EU, as human food products (cottonseed oil and linters). Cottonseed oil availability for food consumption is higher in Spain, accounting for 19000 Mt, followed by Greece (10000 Mt), France (2000 Mt) and the UK (670 Mt), however, Greece has the highest supply per capita per year in the EU, accounting for (1.1 Supply/Cap/Yr. (Kg)), followed by Spain (0.5 Supply/Cap/Yr. (Kg)) (FaoStat Database, 2003). 281-24-236/3006-210-23 cotton nutritional value and compositional characteristics are comparable to those from conventional, non-GM, commercial cotton varieties, therefore, the anticipated uses of 281-24-236/3006-210-23 cotton food products will be no different from those corresponding to conventional cotton varieties.

7.8 Toxicology

7.8.1 Safety evaluation of newly expressed proteins

The genetic modification in 281-24-236/3006-210-23 cotton results in expression of Cry1F, Cry1Ac and PAT proteins. The Cry1F and Cry1Ac proteins have specific toxicity against certain lepidopteran insect pests (target organisms). An acute toxicity study with an approximately 50:50 mixture of Cry1F and Cry1Ac proteins in mice has confirmed the safety of the Cry1F and Cry1Ac proteins to human and animal health.

No mortality, toxicity or adverse clinical signs were observed at the highest dose tested of 375 mg and 350 mg of Cry1F and Cry1Ac pure proteins/kg of body weight. In

addition, there is no evidence for Cry proteins originating from *Bacillus thuringiensis* to have harmful effects on the health of humans and animals.

The safety in terms of toxicity for the PAT protein has already been analysed. The *pat* gene was originally obtained from *Streptomyces viridochromogenes* strain Tü494 which has no known toxic or pathogenic potential. In 1997, EPA issued a final rule exempting PAT from the requirement of a tolerance in all raw agricultural commodities when used as “plant incorporated protectants” (PIP) (FR April the 11, 1997, vol. 62, N°70). In exempting PAT, EPA evaluated data submitted regarding its behaviour in simulated digestive fluid and the acute oral toxicity of the protein. PAT protein didn’t show mortality in the high-dose 2500 mg/kg subgroup test of animals and *in vitro* digestibility data indicated that PAT is degraded rapidly. In addition, a poultry feeding study over a period of 42 days has been carried out confirming that there are no statistically significant differences on mortality, body weight gain or feed conversion between chickens fed a diet containing seeds from 281-24-236/3006-210-23 cotton or from non-GM cotton.

7.8.2 Testing of new constituents other than proteins

Not applicable.

7.8.3 Information on natural food and feed constituents

Detailed compositional analyses of 281-24-236/3006-210-23 cotton demonstrated that composition of 281-24-236/3006-210-23 cotton is substantial equivalent to conventional non-genetically modified cotton varieties.

7.8.4 Testing of the whole GM food/feed

Composition of 281-24-236/3006-210-23 cotton was substantial equivalent to conventional non-genetically modified cotton varieties. In addition, a 42 day broiler chicken study, didn’t show significant differences in mortality among any of the cottonseed meal sources, indicating equal performance in this area.

7.9 Allergenicity

7.9.1 Assessment of allergenicity of the newly expressed protein

The most important factor to consider in assessing allergenic potential is whether the source of the gene being introduced into plants is known to be allergenic. Neither *Bacillus thuringiensis* (the source of the *cry1F* and *cry1Ac* genes) nor *Streptomyces viridochromogenes* (the source of the *pat* gene) have a history of causing allergy. Also, both donor organisms are common soil bacteria.

The assessment of the allergenic potential of the Cry1F, Cry1Ac and PAT proteins has been made following the recommendations and the application of the decision-tree from FAO/WHO. The results indicate a lack of amino acid sequence homology with known

allergens, rapid degradation in simulated gastric fluids, relatively low level of expression, lack of glycosylation and thermolability. The results confirm that Cry1F, Cry1Ac and PAT proteins do not pose any significant risk of being a potential allergen.

7.9.2 Assessment of allergenicity of the whole GM plant or crop

Cotton is extensively cultivated and has a history of safe use. Cotton or derived products of cotton are not considered to have allergenic characteristics.

7.10 Nutritional assessment of GM food/feed

7.10.1 Nutritional assessment of GM food

Results from the compositional analyses demonstrate equivalence between the control and transgenic cotton lines, therefore, food products derived from 281-24-236/3006-210-23 cotton are nutritionally equivalent to food products derived from conventional commercial cotton varieties.

7.10.2 Nutritional assessment of GM feed

Results from the compositional analyses demonstrate equivalence between the control and transgenic cotton lines, therefore, feed products derived from 281-24-236/3006-210-23 cotton are nutritionally equivalent to feed products derived from conventional commercial cotton varieties.

7.11 Post-market monitoring of GM food/feed

Based on the safety evaluation discussed throughout Point 7, no risks to human and animal health and the environment have been identified from the use of 281-24-236/3006-210-23 cotton in food, feed and industrial products as compared to non GM cotton. In addition, the use of the food and feed products derived from 281-24-236/3006-210-23 cotton will not be different to those derived from conventional cotton varieties. Consequently, post market monitoring of GM food/feed products, derived from 281-24-236/3006-210-23 cotton, is not necessary.

8. Mechanism of interaction between the GM plant and target organisms (if applicable)

This notification is to market in the EU of 281-24-236/3006-210-23 cotton and derived products and not for cultivation. A separate notification for the import of 281-24-236/3006-210-23 cottonseeds into the EU, in accordance with Directive 2001/18, has been submitted to the Netherlands –notification C/NL/04/01.

9. Potential changes in the interactions of the GM plant with the biotic environment resulting from the genetic modification

9.1 Persistence and invasiveness

This notification is to market in the EU of 281-24-236/3006-210-23 cotton and derived products and not for cultivation. A separate notification for the import of 281-24-236/3006-210-23 cottonseeds into the EU, in accordance with Directive 2001/18, has been submitted to the Netherlands—notification C/NL/04/01.

9.2 Selective advantage or disadvantage

This notification is to market in the EU of 281-24-236/3006-210-23 cotton and derived products and not for cultivation. A separate notification for the import of 281-24-236/3006-210-23 cottonseeds into the EU, in accordance with Directive 2001/18, has been submitted to the Netherlands—notification C/NL/04/01.

9.3 Potential for gene transfer

This notification is to market in the EU of 281-24-236/3006-210-23 cotton and derived products and not for cultivation. A separate notification for the import of 281-24-236/3006-210-23 cottonseeds into the EU, in accordance with Directive 2001/18, has been submitted to the Netherlands—notification C/NL/04/01.

9.4 Interactions between the GM plant and target organisms

This notification is to market in the EU of 281-24-236/3006-210-23 cotton and derived products and not for cultivation. A separate notification for the import of 281-24-236/3006-210-23 cottonseeds into the EU, in accordance with Directive 2001/18, has been submitted to the Netherlands—notification C/NL/04/01.

9.5 Interactions of the GM plant with non-target organisms

This notification is to market in the EU of 281-24-236/3006-210-23 cotton and derived products and not for cultivation. A separate notification for the import of 281-24-236/3006-210-23 cottonseeds into the EU, in accordance with Directive 2001/18, has been submitted to the Netherlands—notification C/NL/04/01.

9.6 Effects on human health

Cotton is not considered to have harmful effects on human health. As summarised in point 7., a very detailed evaluation for the potential toxicity to humans of the Cry1F, Cry1Ac and PAT proteins, expressed in 281-24-236/3006-210-23 cotton revealed its lack of toxicity and allergenicity.

9.7 Effects on animal health

The genetic modification of 281-24-236/3006-210-23 cotton did not introduce any new compounds known to cause, or expected to cause, any possible immediate and/or delayed effects on animal health, and therefore consumption of 281-24-236/3006-210-23 cotton animal feed products will not have adverse consequences for the food/feed chain.

9.8 Effects on biogeochemical processes

This notification is to market in the EU of 281-24-236/3006-210-23 cotton and derived products and not for cultivation. A separate notification for the import of 281-24-236/3006-210-23 cottonseeds into the EU, in accordance with Directive 2001/18, has been submitted to the Netherlands–notification C/NL/04/01.

9.9 Impacts of the specific cultivation, management and harvesting techniques

This notification is to market in the EU of 281-24-236/3006-210-23 cotton and derived products and not for cultivation. A separate notification for the import of 281-24-236/3006-210-23 cottonseeds into the EU, in accordance with Directive 2001/18, has been submitted to the Netherlands–notification C/NL/04/01.

10. Potential interactions with the abiotic environment

This notification is to market in the EU of 281-24-236/3006-210-23 cotton and derived products and not for cultivation. A separate notification for the import of 281-24-236/3006-210-23 cottonseeds into the EU, in accordance with Directive 2001/18, has been submitted to the Netherlands–notification C/NL/04/01.

11. Environmental monitoring plan (not if application concerns only food and feed produced from GM plants, or containing ingredients produced from GM plants)

This notification is to market in the EU of 281-24-236/3006-210-23 cotton and derived products and not for cultivation. A separate notification for the import of 281-24-236/3006-210-23 cottonseeds into the EU, in accordance with Directive 2001/18, has been submitted to the Netherlands–notification C/NL/04/01.

11.1 General (risk assessment, background information)

This notification is to market in the EU of 281-24-236/3006-210-23 cotton and derived products and not for cultivation. A separate notification for the import of 281-24-236/3006-210-23 cottonseeds into the EU, in accordance with Directive 2001/18, has been submitted to the Netherlands–notification C/NL/04/01.

11.2 Case-specific GM plant monitoring (approach, strategy, method and analysis)

The environmental release of 281-24-236/3006-210-23 cotton is not within the scope of this application. The information required in this section can be found in the relevant application, C/NL/04/01, for environmental release of this cotton according to Directive 2001/18/EC.

11.3 General surveillance of the impact of the GM plant (approach, strategy, method and analysis)

The environmental release of 281-24-236/3006-210-23 cotton is not within the scope of this application. The information required in this section can be found in the relevant application, C/NL/04/01, for environmental release of this cotton according to Directive 2001/18/EC.

11.4 Parameters to be used in a monitoring plan

The environmental release of 281-24-236/3006-210-23 cotton is not within the scope of this application. The information required in this section can be found in the relevant application, C/NL/04/01, for environmental release of this cotton according to Directive 2001/18/EC.

11.5 Implementing general surveillance

The environmental release of 281-24-236/3006-210-23 cotton is not within the scope of this application. The information required in this section can be found in the relevant application, C/NL/04/01, for environmental release of this cotton according to Directive 2001/18/EC.

11.6 Reporting the results of monitoring

The environmental release of 281-24-236/3006-210-23 cotton is not within the scope of this application. The information required in this section can be found in the relevant application, C/NL/04/01, for environmental release of this cotton according to Directive 2001/18/EC.

E. INFORMATION RELATING TO PREVIOUS RELEASES OF THE GM PLANT AND/OR DERIVED PRODUCTS**1. History of previous releases of the GM plant 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*

Not applicable.

b) Conclusions of post-release monitoring

Not applicable.

*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)***2. History of previous releases of the GM plant carried out outside the Community by the same notifier***a) Release country*

USA.

b) Authority overseeing the release

USDA and EPA.

c) Release site

Multiple sites.

d) Aim of the release

Research.

e) Duration of the release

Three seasons.

f) Aim of post-releases monitoring

Control of potential volunteers.

g) Duration of post-releases monitoring

One season.

h) Conclusions of post-release monitoring

281-24-236/3006-210-23 cotton plants performed as expected, with no evidence of any unintentional morphological or phenotypical characteristics. In particular, there was no evidence of enhanced weediness of 281-24-236/3006-210-23 cotton.

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

No adverse effects on human health and environment were found.

3. Links (some of these links may be accessible only to the competent authorities of the Member States, to the Commission and to EFSA):

a) Status/process of approval

The EFSA website http://www.efsa.eu.int/science/gmo/gm_ff_applications/catindex_en.html provides information related to the applications submitted under Regulation (EC) No 1829/2003 on genetically modified food and feed.

b) Assessment Report of the Competent Authority (Directive 2001/18/EC)

Information about the assessment report of notification C/NL/04/01 can be found on: http://gmoinfo.jrc.it/csnifs/C-NL-04-01_AssessmentReport.pdf

c) EFSA opinion

An EFSA opinion for 281-24-236/3006-210-23 cotton was not available at the time of the submission

d) Commission Register (Commission Decision 2004/204/EC14)

http://europa.eu.int/comm/food/food/biotechnology/authorisation/commun_register_en.htm

e) Molecular Register of the Community Reference Laboratory/Joint Research Centre

Information on detection protocols will likely be posted at <http://gmo-crl.jrc.it/>

f) Biosafety Clearing-House (Council Decision 2002/628/EC15)

The publicly accessible portal site of the Biosafety Clearing-House (BCH) can be

found at <http://bch.biodiv.org/>

g) *Summary Notification Information Format (SNIF) (Council Decision 2002/812/EC)*

The SNIF of notification C/NL/04/01 can be found on: <http://gmoinfo.jrc.it/csnifs/C-NL-04-01.pdf>