Adviesraad voor Bioveiligheid
Conseil consultatif de Biosécurité

Advice of the Belgian Biosafety Advisory Council on application EFSA-GMO-NL-2017-139 (genetically modified maize MON 87427 × MON 87460 × MON 89034 × 1507 × MON 87411 × 59122 and its subcombinations) from Monsanto under Regulation (EC) No. 1829/2003

22 January 2021
Ref. SC/1510/BAC/2021_0069

Context

Application EFSA-GMO-NL-2017-139 was submitted by Monsanto for the marketing of genetically modified (GM) maize MON 87427 × MON 87460 × MON 89034 × 1507 × MON 87411 × 59122 (Unique Identifier MON-87427-7 × MON-87460-4 × MON-89034-3 × DAS-Ø15Ø7-1 × MON87411-9 × DAS-59122-7) and its subcombinations, for food and feed uses, import and processing (excluding cultivation) within the European Union, within the framework of Regulation (EC) No. 1829/2003[1].

The six-event stack maize MON 87427 × MON 87460 × MON 89034 × 1507 × MON 87411 × 59122 was obtained by conventional crossing (no new genetic modification involved) of the corresponding single events:
- MON 87427, expressing CP4 EPSPS for glyphosate tolerance;
- MON 87460, expressing the cold shock protein B (CSPB) for abiotic stress resistance, and the NPTII protein, a selectable marker and antibiotic resistance gene;
- MON 89034, expressing Cry1A.105 and Cry2Ab2 protein for resistance to lepidopteran pests;
- 1507, expressing the Cry1F and PAT proteins, conferring resistance to certain lepidopteran pests and tolerance to herbicide products containing glufosinate ammonium;
- MON 87411, expressing the CP4 EPSPS protein that confers tolerance to herbicide products containing glyphosate, the Cry3Bb1 protein for resistance against certain coleopteran insect pests, and the DvSnf1 dsRNA for protection against corn rootworm;
- 59122, expressing the Cry34Ab1, Cry35Ab1 and PAT proteins, for resistance to lepidopteran pests and tolerance to glufosinate-ammonium herbicides.

The application was validated by EFSA on 31 May 2017. A formal three-month consultation period of the Member States was started, lasting from 1 June 2018 until 3 September 2018, in accordance with Articles 6.4 and 18.4 of Regulation (EC) No. 1829/2003 (consultation of national Competent Authorities within the meaning of Directive 2001/18/EC designated by each Member State in the case of genetically modified organisms being part of the products).

Within the framework of this consultation, the Belgian Biosafety Advisory Council (BAC), under the supervision of a coordinator and with the assistance of its Secretariat, decided to only assess the molecular characterisation of the stacked event, as no issues had been raised by the BAC during the evaluations of all the single events, and no new information related to the risk assessment of the single events had become available. The BAC contacted experts to evaluate the dossier, chosen from the common list of experts drawn up by the BAC and the Service Biosafety and Biotechnology (SBB). Four experts answered positively to this request, and formulated a number of comments to the dossier. See Annex I for an overview of all the comments and the comments forwarded to EFSA on 3 September 2018.

[1] Regulation (EC) No 1829/2003 of the European Parliament and of the Council of 22 September 2003 on genetically modified food and feed (OJ L 268, 18.10.2003, p.1).

Biosafety Advisory Council - Secretariat • Service Biosafety and Biotechnology (SBB)
Sciensano • Rue Juliette Wytsmanstraat 14 • B-1050 Brussels • Belgium
T + 32 2 642 52 93 • bac@sciensano.be • www.bio-council.be

The opinion of the EFSA Scientific Panel on GMOs was published on 19 January 2021 (EFSA Journal 2021;19(1):6351[2]).

In delivering the present advice the BAC considered in particular the following information:
- The comments formulated by the experts on application EFSA-GMO-NL-2017-139;
- The opinion of EFSA;
- The advices already adopted by the BAC on the single events and lower-order stacks. The conclusions of the BAC for the most recent applications were as follows:

Event	Application number (EFSA-GMO-)	BAC advice	Conclusions
1507	RX-001	BAC/2017/0186 (21/03/2017)	No major risks for human and animal health or concerning the environment were identified. (minority declaration related to the lack of statistically convincing studies on toxicity)
59122	RX-003	BAC/2017/0740 (19/09/2017)	No major risks for human and animal health or concerning the environment were identified.
MON 89034	RX-015	BAC/2019/1085 (10/12/2019)	Unlikely to pose any risk to human and animal health. No risk identified for the European environment.
MON 87460	2009-70	BAC/2013/0194 (25/03/2013)	Unlikely to pose any risk to human and animal health. No risk identified for the European environment.
MON 87427	2012-110	BAC/2015/0585 (08/09/2015)	Unlikely to pose any risk to human and animal health. No risk identified for the European environment.
MON 87411	2015-124	BAC/2018/0704 (11/09/2018)	Unlikely to pose any risk to human and animal health. No risk identified for the European environment.
MON 89034 × MON 87460 × MON 87427 and subcombinations	2016-134	BAC/2019/0746 (17/09/2019)	Unlikely to pose any risk to human and animal health. No risk identified for the European environment.
MON 89034 × MON 87427 × MON 87411 and subcombinations	2017-144	BAC/2019/1083 (10/12/2019)	Unlikely to pose any risk to human and animal health. No risk identified for the European environment.
1507 × 59122 × MON 89034 × MON 87427 and subcombinations	2013-118	BAC/2017/0742 (19/09/2017)	Unlikely to pose any risk to human and animal health. No risk identified for the European environment.

All GM maize single events mentioned in the table above are authorised in the EU for food and feed uses[3].

[2] See https://doi.org/10.2903/j.efsa.2021.6351
[3] See EU register of GM food and feed: http://ec.europa.eu/food/dyna/gm_register/index_en.cfm

Scientific evaluation

1. Environmental risk assessment

The Biosafety Advisory Council is of the opinion that it is unlikely that the accidental release of maize MON 87427 × MON 87460 × MON 89034 × 1507 × MON 87411 × 59122 (i.e. during transport and/or processing) into the European environment[4] will lead to environmental harm.

2. Molecular characterisation

With regard to the molecular characterisation, the Biosafety Advisory Council is of the opinion that the information provided is sufficient and does not raise safety concerns.

3. Assessment of food/feed safety and nutritional value

3.1. Assessment of compositional analysis

Taking into account the previous assessment of the single events and the new data on compositional analysis provided by the applicant for the three-stacked event, the Biosafety Advisory Council agrees with the GMO panel of EFSA that the compositional data of GM maize MON 87427 × MON 87460 × MON 89034 × 1507 × MON 87411 × 59122, in comparison with its conventional counterpart, do not raise safety concerns.

3.2. Assessment of toxicity

The Biosafety Advisory Council has evaluated the safety of the newly expressed CP4 EPSPS, CSPB, NPTII, Cry1A.105, Cry2Ab2, Cry1F, Cry3Bb1, Cry34Ab1, Cry35Ab1 and PAT proteins and DvSnf1 dsRNA in the context of previous applications, and no safety concerns were identified. Taking into account the updated information considered in the current application, the Council is of the opinion that its previous conclusions remain valid.
The Biosafety Advisory Council is also of the opinion that the combined expression of the newly expressed proteins in the stacked event does not raise toxicological concerns.

3.3. Assessment of allergenicity

The Biosafety Advisory Council has evaluated the safety of the newly expressed CP4 EPSPS, CSPB, NPTII, Cry1A.105, Cry2Ab2, Cry1F, Cry3Bb1, Cry34Ab1, Cry35Ab1 and PAT proteins and DvSnf1 dsRNA in the context of previous applications, and no concerns were identified. Since no new information on allergenicity of these proteins has become available, the Council is of the opinion that its previous conclusions remain valid.
The Biosafety Advisory Council is also of the opinion that the combined expression of the newly expressed proteins in the stacked event does not raise concerns regarding the allergenicity.

3.4. Nutritional value

The Biosafety Advisory Council is of the opinion that the information provided is sufficient to conclude that the nutritional characteristics of maize MON 87427 × MON 87460 × MON 89034 × 1507 × MON 87411 × 59122-derived food and feed are not expected to differ from those of conventional maize varieties.

4. Monitoring

Since the allergenicity of the whole GM maize has not been fully assessed, it is recommended to take up monitoring of allergenicity as part of the general surveillance.

[4] As the application doesn't imply cultivation of the GM crop in the EU, a full environmental assessment, as in the case of a cultivation dossier, is not warranted.

Conclusion

Based on the whole set of data on maize MON 87427 × MON 87460 × MON 89034 × 1507 × MON 87411 × 59122 provided by the applicant, the scientific assessment of the dossier done by the Belgian experts, the opinion of EFSA, and the advices already adopted by the BAC on the six single events and some lower-order stacks, the Biosafety Advisory Council:

1) Agrees with the GMO panel of EFSA that the potential environmental release of maize MON 87427 × MON 87460 × MON 89034 × 1507 × MON 87411 × 59122 is unlikely to pose any threat to the European environment;
2) Agrees with the GMO panel of EFSA that there is no reason to expect interactions between the newly expressed proteins that could impact on the food or feed safety;
3) Agrees with the GMO panel of EFSA that in the context of its proposed uses, maize MON 87427 × MON 87460 × MON 89034 × 1507 × MON 87411 × 59122 is unlikely to pose any risk to human and animal health;

In addition, the Biosafety Advisory Council recommends following up any unanticipated allergenicity aspects of the GM maize in monitoring systems.

Dr. ir. Geert Angenon
President of the Belgian Biosafety Advisory Council

Annex I: Compilation of comments of experts in charge of evaluating the application EFSA-GMO-NL-2017-139 and Comments submitted on the EFSAnet on mandate of the Biosafety Council (ref. BAC_2018_0652)

Outcome of the assessment of application EFSA/GMO/NL/2017/139 by the Biosafety Advisory Council during the formal consultation of the Member States (3-month commenting period in accordance with Articles 6.4 and 18.4 of Regulation (EC) No 1829/2003)

3 September 2018
Ref. SC/1510/BAC/2018_0652

Mandate for the Group of Experts: Mandate of the Biosafety Advisory Council (BAC) of 18 June 2018
Coordinator: René Custers
Experts: Jacques Dommes (ULg), Frank Van Breusegem (UGent), Jan Van Doorsselaere (Vives), Bart Van Droogenbroeck (ILVO)
SBB: Fanny Coppens

Application: **EFSA/GMO/NL/2017/139**
Applicant: **Monsanto**
GMO: **Maize MON 87427 x MON 87460 x MON 89034 x 1507 x MON 87411 x 59122**
Acknowledgement of receipt by EFSA: **1st June 2018**

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 produced from GM plants
☒ Import and processing (Part C of Directive 2001/18/EC)
☐ Seeds and plant propagating material for cultivation in European Union (Part C of Directive 2001/18/EC)

Given the characteristics of the GMO and its intended uses, experts were consulted to cover the following areas of expertise:
☒ Molecular characterization
☐ Environmental aspects
☐ Allergenicity
☐ Toxicology
☐ Food and Feed aspects

The experts were asked to evaluate whether the information provided in the application is sufficient in order to state that the marketing of the genetically modified plant for its intended uses, will not raise any problems for the environment or human or animal health. If information is lacking, the expert was asked to indicate which information should be provided and what the scientifically reasoning is behind this demand.

Biosafety Advisory Council - Secretariat • Service Biosafety and biotechnology (SBB)
Sciensano • Rue Juliette Wytsmanstraat 14 • B-1050 Brussels • Belgium
T + 32 2 642 52 93 • bac@sciensano.be • www.bio-council.be

Comments sent to EFSA are indicated in grey. It should be noted that all the comments received from the experts are considered in the evaluation of this dossier and in formulating the final advice of the Biosafety Advisory Council.

List of comments/questions received from the experts

PART I - GENERAL INFORMATION

Have evaluated this section and consider the information adequate: 2 experts

PART II - SCIENTIFIC INFORMATION

1. HAZARD IDENTIFICATION AND CHARACTERISATION

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

Have evaluated this section and consider the information adequate: 4 experts

1.2. MOLECULAR CHARACTERISATION

1.2.1. Information relating to the genetic modification

Have evaluated this section and consider the information adequate: 4 experts

1.2.2. Information relating to the genetically modified plant

Have evaluated this section and consider the information adequate: 3 experts

Comment 1
From the expression levels of the different genes in the stacked event described in Tables 1-11 it can be observed that for most of the genes the expression levels are higher than in the single events used as a control. In relation to the variable expression levels for the CP4 EPSPS gene, that is introduced twice, the applicants refer to the scientific literature to explain that expression and silencing patterns among homologous genes is a natural phenomenon in plants and may result in up- and down-regulation of gene expression which can even be tissue dependent. For the genes that are only introduced in one copy, e.g. PAT, it is not clear if the difference is statistically significant. Nevertheless, this do not raise safety issues, but it is just an observation that attracted my attention.

1.2.3. Additional information relating to the genetically modified plant required for the environmental safety aspects

Have evaluated this section and consider the information adequate: 4 experts

1.2.4. Conclusions of the molecular characterisation

Have evaluated this section and consider the information adequate: 3 experts

Comment 1

With regard to the molecular characterisation, the Expert is of the opinion that the information provided is sufficient and does not raise safety concerns, for the stacked event described in the application, as well as for the subcombinations that were not previously assessed.

1.3. COMPARATIVE ANALYSIS

1.3.1. Choice of the conventional counterpart and additional comparators

1.3.2. Experimental design and statistical analysis of data from field trials for comparative analysis

1.3.3. Selection of material and compounds for analysis

1.3.4. Comparative analysis of composition

1.3.5. Comparative analysis of agronomic and phenotypic characteristics

1.3.6. Effects of processing

1.3.7. Conclusion

1.4. TOXICOLOGY

1.4.1. Testing of newly expressed proteins

Have evaluated this section and consider the information adequate: 1 expert

1.4.2. Testing of new constituents other than proteins

Have evaluated this section and consider the information adequate: 1 expert

1.4.3. Information on natural food and feed constituents

Have evaluated this section and consider the information adequate: 1 expert

1.4.4. Testing of the whole genetically modified food or feed

Have evaluated this section and consider the information adequate: 1 expert

1.4.5. Conclusion of the toxicological assessment

Have evaluated this section and consider the information adequate: 1 expert

1.5. ALLERGENICITY

1.5.1. Assessment of allergenicity of the newly expressed protein

Have evaluated this section and consider the information adequate: 1 expert

1.5.2. Assessment of allergenicity of the whole genetically modified plant

Have evaluated this section and consider the information adequate: 1 expert

1.5.3. Conclusion of the allergenicity assessment

Have evaluated this section and consider the information adequate: 1 expert

1.6. NUTRITIONAL ASSESSMENT

1.6.1. Nutritional assessment of the genetically modified food

1.6.2. Nutritional assessment of the genetically modified feed

1.6.3. Conclusion of the nutritional assessment

2. EXPOSURE ASSESSMENT — ANTICIPATED INTAKE OR EXTENT OF USE

3. RISK CHARACTERISATION

4. POST-MARKET MONITORING ON THE GENETICALLY MODIFIED FOOD OR FEED

5. ENVIRONMENTAL RISK ASSESSMENT (ERA)

5.1. INTRODUCTION

5.2. GENERAL APPROACH OF THE ERA

5.3. SPECIFIC AREAS OF RISK

5.3.1. Persistence and invasiveness including plant-to-plant gene flow

5.3.2. Plant to micro-organisms gene transfer

5.3.3. Interactions of the GM plant with target organisms

5.3.4. Interactions of the GM plant with non-target organisms (NTOs)

5.3.5. Impacts of the specific cultivation, management and harvesting techniques

5.3.6. Effects on biogeochemical processes

5.3.7. Effects on human and animal health

5.3.8. Overall risk evaluation and conclusions

6. POST-MARKET ENVIRONMENTAL MONITORING PLAN (PMEM)

6.1. INTERPLAY BETWEEN ENVIRONMENTAL RISK ASSESSMENT, RISK MANAGEMENT AND PMEM

6.2. CASE-SPECIFIC GM PLANT MONITORING (STRATEGY, METHOD AND ANALYSIS)

6.3. GENERAL SURVEILLANCE FOR UNANTICIPATED ADVERSE EFFECTS (STRATEGY, METHOD)

6.4. REPORTING THE RESULTS OF PMEM

7. ADDITIONAL INFORMATION RELATED TO THE SAFETY OF THE GENETICALLY MODIFIED FOOD OR FEED