

## ADVISORY COMMITTEE ON NOVEL FOODS AND PROCESSES

## EFSA GMO PANEL OPINIONS ON GM MAIZE HYBRIDS

**Issue**

The Committee is asked to consider the EFSA GMO Panel opinions on applications for authorisation of grain and grain-derived food ingredients from maize hybrid lines MON863 x NK603, MON863 x MON810 and MON863 x MON810 x NK603, under Regulation (EC) No 1829/2003. EFSA has also issued a separate opinion regarding the deliberate release of MON863 x MON810 under part C of Directive 2001/18/EC.

Given its previous comments on the safety assessment of hybrid lines, the Committee is asked whether or not it agrees with the GMO Panel's opinions and in particular the strategy used to assess the hybrid lines.

**Introduction**

1. The EFSA GMO Panel recently published opinions on the risk assessment of 3 different hybrid lines submitted for authorisation under the GM food and feed Regulation 1829/2003. These are, MON863 x NK603 (**Annex 1**), MON863 x MON810 (**Annex 2**) and MON863 x MON810 x NK603 (**Annex 3**). A separate opinion was published for MON863 x MON810 under Part C of the deliberate release Directive 2001/18/EC (**Annex 4**), although only a single risk assessment was carried out.
2. In each case, the applications cover maize plants obtained by conventional breeding of plants from different maize lines that have already been evaluated for use in the EU. These parental lines are summarised in the following table:

GM maize line	Properties	Evaluated / authorised for use in food in the EU
MON863	Contains a variant cry3Bb1 gene conferring resistance to certain pests	<ul style="list-style-type: none"> <li>• Submission under the novel foods regulation in 2002</li> <li>• EFSA opinion published in 2004</li> <li>• Currently awaiting a final authorisation decision</li> </ul>
MON810	Contains the Cry1Ab gene conferring resistance to certain pests	<ul style="list-style-type: none"> <li>• Authorised in 1997 under the novel foods regulation</li> </ul>

NK603	Contains two copies of the CP4 epsps gene, conferring tolerance to the herbicide glyphosate	<ul style="list-style-type: none"> <li>• Submission under the novel foods regulation in 2002</li> <li>• EFSA opinion published in 2003</li> <li>• Authorisation granted in 2004</li> </ul>
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3. The Committee has previously considered the safety of the hybrid MON863 x MON810 under Regulation (EC) 258/97, for food and feed use and also for deliberate release under part C of Directive 2001/18/EC. The Committee was happy with the data provided under the deliberate release application but voiced concerns regarding the data provided for the application under (EC) 258/97. Taken as a whole in its discussions on this and other hybrid lines the ACNFP's view has been that interactions between the introduced traits cannot be ruled out and that such interactions may have consequences for safety. Therefore, hybrids should be considered on a case by case basis to decide whether further data on the hybrid line are necessary. This view was expressed in a letter to the EFSA GMO Panel in August 2004 (**Annex 5**).
  
4. The application for MON863 x MON810 was subsequently transferred under the Genetically Modified Food and Feed Regulation (EC) 1829/2003 to be reviewed by EFSA. The other two hybrids, MON863 x NK603 and MON863 X MON810 X NK603 were submitted directly to EFSA under Regulation (EC) 1829/2003. The scope of both these applications is for food and feed use, import and processing.
  
5. The Committee has reviewed all the data provided for the 3 parental lines and issued positive opinions on the safety of these lines for their intended use.
  
6. The EFSA GMO Panel has issued guidelines for the risk assessment of genetically modified plants and derived food and feed (**Annex 6**). The guidelines state that where events have been combined by the interbreeding of existing approved lines the need for further molecular analysis will depend on the nature of the genetic modifications involved. The Panel goes on to state that this should be considered on a case by case basis. However, in the Panel's opinion, there is no *a priori* or biological reason to assume that traditional interbreeding of independent approved GM lines will pose any additional risk through a compromised stability of copy number and insert structure.
  
7. The guidelines also mention the possibility of additional risks that may arise from the combined effects of stacked genes, e.g. on biochemical pathways,

and also the interaction between newly expressed proteins, new metabolites and the original plant constituents.

8. The EFSA GMO Panel's initial safety assessment of MON 863 and the hybrid line MON 863 x MON 810 (**Annex 7**) was the first example of the safety assessment of hybrid lines. The Panel considered whether the hybrid should be viewed as a separate GM plant construct or an example of extended use of the component single insert lines MON 863 and MON 810. The Panel declared that this distinction had no bearing on the scientific assessment that was undertaken by the Panel and the conclusions are relevant in either case.
9. The Panel however did state that the extent to which data on the individual parent lines can be used to assess the hybrid needs to be considered on a case by case basis. Of particular relevance are the individual inserts used to transform the parent lines. The Panel stressed in its initial assessment of the safety of MON 863 x MON 810 that no precedent should be seen to be set for the future safety assessment of other GM hybrid lines.
10. The Panel concluded that, while it was scientifically valid to use data on the GM lines MON 863 and MON 810 to support the safety assessment of the hybrid MON 863 x MON 810, they were divided over the need for confirmatory data for the safety assessment of the hybrid. As they could not reach agreement the Panel asked for an additional 90-day sub-chronic rat feeding study to be carried out.
11. The applicant provided data from such a study and the Panel has now completed its safety assessment of the MON 863 x MON 810 hybrid. Similar 90-day rat feeding studies were also carried out for MON863 x NK603 and MON 863 x MON 810 x NK 603 and the safety assessments published together. The Panel concluded that the results of the 90-day feeding studies did not indicate adverse effects from the consumption of these lines.
12. The GMO Panel has assessed the overall safety of these GM maize hybrids with reference to their intended uses according to the principles described in the GMO Panel's Guidance Document for the risk assessment of GM plants and derived food and feed. This included the characterisation of the newly introduced DNA and proteins, a comparative analysis of agronomic traits and composition, and a safety evaluation of the new proteins and the whole food and feed, particularly concerning their possible toxicity and allergenicity. Nutritional and environmental assessments were also undertaken, including a

review of the post-market monitoring plan. Outstanding questions raised by Member States were also taken into consideration.

13. The Panel considers that the information available for the 3 hybrid lines addresses the outstanding questions raised by Member States and concludes that they will not have adverse effects on human and animal health or the environment in the context of their proposed use.

#### **Committee action sought**

14. The Committee is asked to consider the EFSA GMO Panel Opinions and to state whether it agrees with the Panel's risk assessment of these hybrid lines in the light of its previous comments on the evaluation of hybrids between GM plants.

**Secretariat  
September 2005**

#### **Annexes attached**

**Annex 1:** Opinion of the Scientific Panel on Genetically Modified Organisms on an application (Reference EFSA-GMO-UK-2004-06) for the placing on the market of insect-protected glyphosate-tolerant genetically modified maize MON863 x NK603, for food and feed uses, and import and processing under Regulation (EC) No 1829/2003 from Monsanto. EFSA Journal (2005): 255, p1-21.

**Annex 2:** Opinion of the Scientific Panel on Genetically Modified Organisms on an application (Reference EFSA-GMO-DE-2004-03) for the placing on the market of insect-protected genetically modified maize MON 863 x MON 810, for food and feed use, under Regulation (EC) No 1829/2003 from Monsanto. EFSA Journal (2005): 252, p1-23.

**Annex 3:** Opinion of the Scientific Panel on Genetically Modified Organisms on an application (Reference EFSA-GMO-BE-2004-07) for the placing on the market of insect-protected glyphosate-tolerant genetically modified maize MON863 x MON810 x NK603, for food and feed uses, and import and processing under Regulation (EC) No 1829/2003 from Monsanto. EFSA Journal (2005): 256, p1-25.

**Annex 4:** Opinion of the Scientific Panel on Genetically Modified Organisms on a request from the Commission related to the notification (Reference C/DE/02/9) for the placing on the market of insect-protected genetically modified maize MON 863 x MON 810, for import and processing, under Part C of Directive 2001/18/EC from Monsanto. EFSA Journal (2005): 251, p1-22.

**Annex 5:** Letter from the ACNFP to the EFSA GMO Panel regarding the draft guidelines for risk assessment of GM plants.

### **Annexes available on request**

**Annex 6:** Guidance document of the Scientific Panel on Genetically Modified Organisms for the risk assessment of genetically modified plants and derived food and feed. The EFSA Journal (2004): 99, p1-94.

[http://www.efsa.eu.int/science/gmo/gmo\\_guidance/catindex\\_en.html](http://www.efsa.eu.int/science/gmo/gmo_guidance/catindex_en.html)

**Annex 7:** Opinion of the Scientific Panel on Genetically Modified Organisms on a request from the Commission related to the safety of foods and food ingredients derived from insect-protected genetically modified maize MON 863 and MON 863 x MON 810, for which a request for placing on the market was submitted under Article 4 of the Novel Food Regulation (EC) No 258/97 by Monsanto. EFSA Journal (2004): 50, p1-25.

[http://www.efsa.eu.int/science/gmo/gmo\\_opinions/383\\_en.html](http://www.efsa.eu.int/science/gmo/gmo_opinions/383_en.html)

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This document has been published on the EFSA website at:

[http://www.efsa.eu.int/science/gmo/gmo\\_opinions/1032\\_en.html](http://www.efsa.eu.int/science/gmo/gmo_opinions/1032_en.html)

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**Secretariat  
September 2005**

**ADVISORY COMMITTEE ON NOVEL FOODS AND PROCESSES**

Letter from the ACNFP to the EFSA GMO Panel regarding the draft guidelines for risk assessment of GM plants.

**Secretariat  
September 2005**

Professor Harry Kuiper  
Chairman, Scientific Panel on GMOs  
c/o Dr Suzy Renckens  
European Food Safety Authority  
Brussels

*by email*

19 August 2003

Dear Professor Kuiper

**EFSA GMO PANEL – DRAFT GUIDELINES FOR RISK ASSESSMENT OF GM PLANTS**

Following Dr Sonia Molnar's letter of 4 June, addressed to Dr Renckens, I thought it might be useful to expand upon the ACNFP's comments on the safety assessment of hybrids between plants with different GM events.

As you are probably aware, the ACNFP is the independent expert committee that advises the UK Food Standards Agency on matters related to GM and novel (non-GM) foods. The Committee has reviewed a number of applications for hybrids between independent GM lines and has concluded that there are circumstances where the traits introduced by the genetic modifications could interact in an unpredictable way. This interaction could have consequences for the safety of the resulting hybrid plants and the Committee therefore thinks that clearance of a GM line cannot automatically be extended to include hybrids with other GM lines.

GM hybrids should therefore be examined on a case-by-case basis. For some combinations, the likelihood of interaction will be small and no further assessment will be required, but in others it could be necessary to obtain further data on the properties of the hybrids before a decision can be reached.

The ACNFP therefore welcomes the fact that EFSA has identified GM hybrids as requiring special attention, and considers that it could further assist applicants if the

final version of the guidance explains the type of data that should be provided in these cases.

The ACNFP is aware that Professor Pollock, Chairman of the UK Advisory Committee on Releases to the Environment, has recently written to you to suggest that it is not necessary to undertake any additional assessment of hybrids between approved GM lines. While this may be the case for the environmental risk assessment, it is the Committee's opinion that the situation is different for food safety.

Yours sincerely

*(sent by email)*

**Dr Sandy Lawrie**  
Secretary to ACNFP