

Renewal of import and processing of GM maize DAS-40278-9

COGEM advice CGM/261002-02

COGEM has been requested (MA 260008_001) to evaluate the environmental risks associated with the renewal of the authorisation for import, processing and food and feed use of genetically modified (GM) maize DAS-40278-9 (GMFF-2025-37093, RX051), as submitted by Corteva Agriscience Belgium B.V. on behalf of Corteva Agriscience LLC.

GM maize DAS-40278-9 expresses a plant-optimised version of the gene *aad-1* (aryloxyalkanoate dioxygenase), originating from the bacterium *Sphingobium herbicidovorans*.¹ The enzyme this gene encodes confers tolerance to several synthetic auxin-acting-herbicides such as 2,4 dichlorophenoxyacetic acid (2,4-D) and to herbicides containing aryloxyphenoxypropionate (AOPP).

COGEM has previously advised positively on the import and processing of DAS-40278-9,² as well as on the import and processing of several stacked events with DAS-40278-9 as one of the parental lines.^{3,4,5,6,7,8,9} The GM maize has been authorised for placement on the market in the European Union in 2017.¹⁰

Maize (*Zea mays*) is a highly domesticated crop that is cultivated globally. Maize is wind pollinated.^{11,12} Insect pollination of maize is highly limited but cannot be excluded.¹³ Maize is very sensitive to weed competition.¹⁴ During the long process of domestication, maize has lost the ability to persist in the wild.¹² After ripening, the seeds (the kernels) adhere to the cob and do not scatter naturally.^{13,15} Consequently, seed dispersal is severely hampered.

Maize does not tolerate prolonged cold and frost, and requires warm conditions to grow.^{13,16,17} In cultivation areas with warm climatic conditions, volunteers can be present the year following maize cultivation due to spilled cobs or kernels. However, these volunteers are usually killed by common mechanical pre-planting soil preparation practices.¹³ In the Netherlands the appearance of volunteers is rare, although maize plants occasionally have been observed outside agricultural fields.^{16,18} Any volunteers emerging will be killed by frost at the onset of winter.¹⁶ COGEM is not aware of any reports of feral maize populations in the Netherlands.¹⁶ Hybridisation of GM maize with species other than teosinte – the wild relative of maize – cannot occur. Teosinte seeds can be purchased in the Netherlands,¹⁹ however – as it is absent in maize fields and nature in the Netherlands¹⁶ – the risks of hybridisation of GM maize with teosinte is negligible in the Netherlands.

In the application for renewal, the bioinformatic analysis of the inserted elements and their 3' and 5' junctions in the genome of GM maize DAS-40278-9 was updated to assess protein sequence similarities using up-to-date databases of allergens, toxins, and general proteins. No indications for potential environmental risks were identified.

The applicant performed a systematic literature search using a collection of bibliographic databases, covering the period from January 2017 to January 2026. No publications were identified that would

invalidate the conclusions of the previous risk assessment. There is no indication that the introduced traits in GM maize DAS-40278-9 will allow the GM maize to survive or establish in the Dutch environment.

The applicant supplied annual reports on the monitoring carried out between 2018 and 2025. The information in the annual monitoring reports gives no indication of adverse effects or incidents resulting from import and processing of maize DAS-40278-9. The applicant did not propose any changes to the existing post-market environmental monitoring (PMEM) plan for maize DAS-40278-9. COGEM has published several recommendations for further improvement of the PMEP plan,^{20,21} but considers the current PMEM plan adequate for import and processing of GM maize DAS-40278-9.

COGEM is of the opinion that renewal of the market authorisation for import and processing of GM maize DAS-40278-9 poses a negligible risk to the Dutch environment. COGEM abstains from giving advice on the potential risks of incidental consumption, as a food/feed assessment is carried out by other organisations.

References

1. Herman RA et al. (2010). Compositional safety of event DAS-40278-9 (AAD-1) herbicide-tolerant maize. *GM Crops* 1: 294-311
2. COGEM (2011). Import and processing of genetically modified maize DAS-40278-9. COGEM advice CGM/110510-01
3. COGEM (2017). Import and processing of genetically modified maize MON89034 x 1507 x MON88017 x 59122 x DAS-40278-9. COGEM advice CGM/170814-01
4. COGEM (2017). Import and processing of genetically modified maize MON89034 x 1507 x NK603 x DAS-40278-9. COGEM advice CGM/170131-01
5. COGEM (2018). Import and processing of genetically modified maize MON87427 x MON89034 x 1507 x MON87411 x 59122 x DAS-40278-9 and sub-combinations. COGEM advice CGM/180806-03
6. COGEM (2018). Import and processing of genetically modified maize MON89034 x 1507 x MIR162 x NK603 x DAS-40278-9 and sub-combinations. COGEM advice CGM/181220-03
7. COGEM (2021). Environmental risk assessment of import and processing of genetically modified maize DP4114 x MON89034 x MON87411 x DAS-40278-9 and its subcombinations. COGEM advice CGM/210709-01
8. COGEM (2024). Import and processing of genetically modified maize DP202216 x NK603 x DAS-40278-9 and subcombinations. COGEM advice CGM/240415-01
9. COGEM (2026). Import of GM maize DAS1131 x DP910521 x DP202216 x DAS-40278-9. COGEM advice CGM/260205-01
10. European Commission (2017). Commission Implementing Decision (EU) 2017/1212 of 4 July 2017 authorising the placing on the market of products containing, consisting of, or produced from genetically modified maize DAS-40278-9, pursuant to Regulation (EC) No 1829/2003 of the European parliament and of the Council on genetically modified food and feed (notified under document C(2017) 4503). L 173/43
11. Hin CJA (2001). Landbouwkundige risico's van uitkruising van GGO-gewassen. [In Dutch] Centrum voor Landbouw en Milieu (CLM)
12. Treu R & Emberlin J (2000). Pollen dispersal in the crops maize (*Zea mays*), oil seed rape (*Brassica napus* ssp. *oleifera*), potatoes (*Solanum tuberosum*), sugar beet (*Beta vulgaris* ssp. *vulgaris*) and wheat (*Triticum aestivum*). Evidence from Publications. Soil Association
13. Andersson M & Carmen de Vicente M (2010). Gene flow between crops and their wild relatives. The John Hopkins University Press, Baltimore, Maryland, The United States of America
14. CAB International (2007). Crop Protection Compendium. *Zea mays* (maize). CD-ROM edition, Wallingford
15. Organisation for Economic Cooperation and Development (OECD) (2003). Consensus document on the biology of *Zea mays* ssp. *mays* (Maize)
16. Huiting HF et al. (2018). Are teosinte and feral maize present in the Netherlands? COGEM report CGM 2018-06
17. Miedema P (1982). The effect of low temperature on *Zea mays*. *Adv. Agron.* 35: 93-128

18. Van de Wiel CCM et al. (2011). Crop volunteers and climate change. Effects of future climate change on the occurrence of maize, sugar beet and potato volunteers in the Netherlands. COGEM report 2011-11
19. Vreeken zaden. <https://www.vreeken.nl/190840-oermais-teosinte> (visited: August 8, 2026)
20. COGEM (2010). General Surveillance. COGEM report CGM/100226-01
21. COGEM (2015). Advice on improving the general surveillance of GM crops. COGEM advice CGM/150601-02