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# Assessment of genetically modified sugar beet KWS20-1 for food and feed uses, import and processing under Regulation (EC) No 1829/2003 (application GMFF-2023-14732 (#184))

**Scientific Opinion of the Panel on genetically modified organisms of the Norwegian Scientific Committee for Food and Environment**

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Scientific Opinion of the Panel on genetically modified organisms – food and feed of the Norwegian Scientific Committee for Food and Environment
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# Assessment of genetically modified sugar beet KWS20-1 for food and feed uses, import and processing (application GMFF-2023-14732 (184)) under regulation (EC) No 1829/2003 of the European Parliament and of the Council of 22 September 2003 on genetically modified food and feed

## Authors of the opinion

The authors have contributed to the opinion in a way that fulfils the authorship principles of VKM (VKM, 2019). The principles reflect the collaborative nature of the work, and the authors have contributed as members of the VKM Panel on genetically modified organisms.

**Members of the Panel on** genetically modified organisms (in alphabetical order after chair of the Panel): Monica Sanden (Chair), Johanna Bodin, Nur Duale, Kristian Prydz, Volha Shapaval and Tage Thorstensen

**VKM staff** (in alphabetical order): Anne Marthe Ganes Jevnaker and Ville Erling Sipinen

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# Summary

The scope of the application is for food produced from genetically modified sugar beet KWS20-1 or containing ingredients produced from sugar beet KWS20-1, and feed produced from sugar beet KWS20-1 for import and processing submitted within the framework of Regulation (EC) No 1829/2003. The application does not include cultivation or import of viable material.

Genetically modified sugar beet KWS20-1 was developed through *Agrobacterium*-mediated integration of a single T-DNA from plasmid PV-BVHT527462, containing the *dmo*-gene from *Stenotrophomonas maltophiliagenes, pat*-gene from *Streptomyces viridochromogenes* and *cp4epsps*-gene from *Agrobacterium* sp. The genes encode the enzymes DMO, PAT and CP4 EPSPS conferring tolerance to dicamba-, glufosinate ammonium- and glyphosate- based herbicides, respectively.

The scientific documentation provided in the application for genetically modified sugar beet KWS20-1 is adequate for risk assessment, and in accordance with EFSA guidance on risk assessment of genetically modified plants for use in food or feed. The VKM GMO panel does not consider the introduced modifications in sugar beet KWS20-1 to imply potential specific health risk in Norway, compared to EU-countries. The EFSA opinion is adequate also for Norwegian considerations. Therefore, a full risk assessment of sugar beet KWS20-1 was not performed by the VKM GMO Panel.

# Sammendrag

Søknaden gjelder mat produsert fra sukkerbete KWS20-1 eller mat som inneholder ingredienser fra sukkerbete KWS20-1, og fôrprodukter til import og prosessering, under forordning (EF) nr. 1829/2003. Søknaden gjelder ikke dyrkning eller import av levende plantemateriale.

Genmodifisert sukkerbete KWS20-1 ble utviklet ved transformasjon av planteceller ved hjelp av *Agrobacterium tumefaciens* med plasmidet PV-BVHT527462. Sukkerbeten KWS20-1 uttrykker genet *dmo* fra *Stenotrophomonas maltophiliagenes*, *pat* fra *Streptomyces viridochromogenes,* og *cp4epsps* fra *Agrobacterium* sp. De kodede proteinene DMO, PAT og CP4 EPSPS gjør KWS20-1 henholdsvis tolerant mot ugressmiddelene Dicamba, glufosinat-ammonium og glyfosat.

Den vitenskapelige dokumentasjonen i søknaden er dekkende for risikovurdering, og i samsvar med EFSAs retningslinjer for risikovurdering av genmodifiserte planter til bruk i mat eller fôr. VKMs faggruppe for GMO anser ikke at genmodifiseringene i sukkerbete KWS20-1 tilsier en økt helserisiko i Norge sammenlignet med EU-land. EFSAs risikovurdering er også dekkende for norske forhold. Derfor har ikke VKM utført en full risikovurdering av sukkerbete KWS20-1.

# 1 Background as provided by the Norwegian Food Safety Authority and the Norwegian Environment Agency

The Norwegian Food Safety Authority (NFSA) and the Norwegian Environment Agency (NEA) have assigned VKM to perform assessments of genetically modified organisms (GMOs) and derived products thereof, for which there are sought approval of authorisation to the European market under the Regulation (EC) No 1829/2003 of the European Parliament and of the Council of 22 September 2003 on genetically modified food and feed. VKM is requested to perform assessments for all GMO applications made accessible through the EFSA Document Management System (DMS), where the main focus should be on potential health or environmental risks specific to Norway compared to the EU.

# 2 Assessment of genetically modified sugar beet KWS20-1 (application GMFF-2023-14732 (184))

## 2.1 Comments during the EFSA scientific consultation-period

When EFSA submits an application for scientific consultation with a three-month commenting deadline, VKM shall initiate the scientific assessment. From the application is submitted for scientific consultation until EFSA has published its Scientific Opinion (6.5 months + the period when 'the clock stops') VKM should:

• Use this period to assess the scientific quality of the documentation presented in the application. Possible lack of essential information and other relevant scientific literature should be addressed. The application must be in compliance with Regulation (EU) No. 503/2013 and adhere to EFSA guidance (EFSA 2010, 2011) for risk assessment of genetically modified organisms.

• Provide comments to EFSA within the deadline and inform The Norwegian Food Safety Authority (NFSA) and the Norwegian Environment Agency (NEA) no later than two weeks before the deadline. If no comments are provided to EFSA, VKM notifies the NFSA and NEA for the reasons why no comment was submitted.

• Assess whether there are considerations specific to Norway that need to be addressed. If such considerations are identified VKM should immediately inform the NFSA and NEA.

**Stage 1**

| | |
|---|---|
| **1. Application** | **GMFF-2023-14732 (184)**<br><br>Genetically modified sugar beet KWS20-1 |

**2. Information related to the genetic modification:**

Genetically modified sugar beet KWS20-1 was developed through *Agrobacterium*-mediated integration of a single T-DNA from plasmid PV-BVHT527462, containing the *dmo*-gene from *Stenotrophomonas maltophiliagenes, pat*-gene from *Streptomyces viridochromogenes* and *cp4epsps* from *Agrobacterium* sp. The genes encode the enzymes DMO, PAT and CP4 EPSPS conferring tolerance to dicamba-, glufosinate ammonium- and glyphosate- based herbicides, respectively.

| ***Genes*** | **Proteins** |
|---|---|
| *dmo* | DMO |
| *pat* | PAT |
| *cp4epsps* | CP4 EPSPS |

| | | |
|---|---|---|
| **3. Previously assessed by VKM** | YES: | NO: X |
| **4. If yes in item 3. – comments from VKM:** | | |
| **5. Date when EFSA declared the application as valid in accordance with Articles 6(1) and 18(1)** | 23.10.2023 | |
| **6. Deadline of EFSAs commenting period** | 27.01.2024 | |
| **7. VKMs assessment of the documentation in the application** | | |
| Applicants' documentation: | The VKM Panel on genetically modified organisms finds the documentation provided as satisfactory for risk assessment. | |
| Additional literature used by VKM: | No | |
| Documentation in compliance with Regulation (EU) No. 503/2013: | YES: X | NO: |

| | | |
|---|---|---|
| Documentation in accordance with EFSA guidance for risk assessment of genetically modified plants (EFSA 2010, 2011): | YES: X | NO: |
| **8. Comments submitted from VKM during EFSAs public consultation** | YES: | NO: X |
| **9. Date of submission from VKM** | NA | |
| **10. Comment(s) to EFSA:** | | |
| **11. If NO in item 8. – comments from VKM:** | | |
| Application is in accordance with the EFSA guidance on genetically modified plants. | | |
| **12. Need for national consideration(s)** | YES: | NO: X |
| **13. If YES in item 12. – comments from VKM:** | | |
| **14. If NO in item 12. – comments from VKM:** | | |
| The VKM GMO Panel does not consider the introduced modifications in sugar beet KWS20-1 to imply potential specific health risk in Norway, compared to EU-countries. | | |
| **15. VKMs conclusion regarding the application:** | | |
| The scientific documentation provided in the application is adequate for risk assessment, and in accordance with the EFSA guidance on risk assessment of genetically modified plants for use in food or feed. | | |

## 2.2 Considerations after EFSAs publication of their scientific opinion – part 1

When EFSA publishes their scientific opinion together with the comments from the member states, VKM shall within a month inform the NFSA and EEA on the following:

• Are EFSA's answer(s) to the Norwegian comments satisfactorily answered, or do VKM still have scientific objections to EFSA's conclusions

• Do EFSA's answers to comments from member states indicate need for follow-up by VKM

• Considerations specific to Norway

| Stage 2 | |
|---|---|
| **1. Date of publication of EFSA opinion** | 12.05.25 |
| **2. VKMs deadline for informing NFSA and EEA** | 12.06.25 |
| **3. If YES in item 8. (table 1)– Answer from EFSA has been considered by VKM as satisfactory (Annex G)** | NA |
| **4. If YES in item 3 – Comments from VKM:** | |
| | |
| **5. If NO in item 3 – Comment(s) and further considerations from VKM:** | |
| | |
| **6. Follow-up item 12 (table 1) – comments from VKM** | |
| The VKM GMO Panel does not consider the introduced modifications in sugar beet KWS20-1 to imply potential specific health risk in Norway, compared to EU-countries. | |
| **7. Considerations from VKM regarding comments from EU member states and other countries under Annex G:** | |
| No member state comments imply the need for follow-up by VKM. | |

## 2.3 Considerations after EFSAs publication of their scientific opinion – part 2

If VKM's comments regarding health and environmental risk are not considered to be satisfactorily answered by EFSA, VKM shall within three months carry out a risk assessment of these conditions, as well as conditions specific to Norway. VKM shall highlight uncertainty and knowledge gaps. It shall be stated in what area there are knowledge gaps, and whether the uncertainty, quality of the data, and knowledge gaps will affect the conclusion.

| Stage 3 | | |
|---|---|---|
| **1. Need for further assessment(s)** | YES: | NO: X |
| **2. If YES in item 1. – Further considerations from VKM:** | | |
| | | |
| **3. If NO in item 1. – comments from VKM:** | | |
| The scientific documentation provided in the application is adequate for risk assessment, and in accordance with the EFSA guidance on risk assessment of genetically modified plants for use in food or feed.<br><br>The EFSA opinion is adequate also for Norwegian considerations. | | |
| **4. Need for national considerations** | YES: | NO: X |
| **5. If YES in item 4. – comments from VKM:** | | |
| | | |
| **6. If NO in item 4. – comments from VKM** | | |
| The VKM GMO Panel does not consider the introduced modifications in sugar beet KWS20-1to imply potential specific health risk in Norway, compared to EU-countries. | | |
| **7. Need for a risk assessment** | YES: | NO: X |
| **8. Date of deadline for risk assessment** | NA | |
| **9. Date of publication of assessment** | 18.08.25 | |

# 3 Conclusions

The VKM GMO Panel has performed an assessment of genetically modified sugar beet KWS20-1.

KWS20-1 contains the transgenes *dmo, pat* and *cp4epsps* which encode the enzymes DMO, PAT and CP4 EPSPS, conferring tolerance to dicamba-, glufosinate ammonium- and glyphosate- based herbicides, respectively.

The VKM GMO panel has assessed the documentation in application GMFF-2023-14732 (#184). The scientific documentation provided in the application for genetically modified sugar beet KWS20-1 is adequate for risk assessment, and in accordance with EFSA guidance on risk assessment of genetically modified plants for use in food or feed. The VKM GMO panel does not consider the introduced modifications in sugar beet KWS20-1 to imply potential specific health risk in Norway, compared to EU-countries.

The EFSA opinion is adequate also for Norwegian considerations. Therefore, a full risk assessment of sugar beet KWS20-1 was not performed by the VKM GMO Panel.

# 4 References

EFSA (2011) Guidance for risk assessment of food and feed from genetically modified plants. The EFSA Journal 9(5): 2150. http://www.efsa.europa.eu/en/efsajournal/doc/2150.pdf

EFSA (2025) Assessment of genetically modified sugar beet KWS20-1 (application GMFF-2023-14732) EFSA Journal. 2025;23:e9381. https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2025.9381