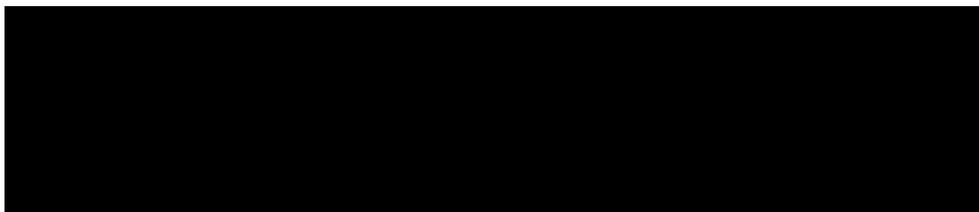

**Review of literature of DAS-44406-6 soybean in the scope of the
authorisation for food and feed uses, import and processing in the EU
(2020 update)**



PHI-R106-Y20

© 2020 Pioneer Hi-Bred International, Inc. and Dow AgroSciences, LLC All Rights Reserved.

This document is protected by copyright law and under Art. 31 of Regulation (EC) No 1829/2003. This document and material is for use only by the regulatory authority for the purpose that it is submitted by Pioneer Hi-Bred International, Inc. ("Pioneer") and Dow AgroSciences LLC ("DAS"), members of Corteva Agriscience group of companies, its affiliates, or its licensees and only with the explicit consent of Pioneer or DAS. Except in accordance with law, any other use of this material, without prior written consent of Pioneer or DAS, is strictly prohibited. The intellectual property, information, and materials described in or accompanying this document are proprietary to Pioneer and DAS. By submitting this document, Pioneer and DAS do not grant any party or entity not authorized by Pioneer or DAS any right or license to the information or intellectual property described in this document.

Table of contents

1. SUMMARY	3
2. CONFIRMATION OF THE SUITABILITY OF THE SEARCH STRINGS	3
3. RESULTS OF THE LITERATURE SEARCH EXERCISE	3
3.1. OUTCOME OF LITERATURE SEARCHES	3
4. CONCLUSION	6
REFERENCES	7
APPENDIX 1. DETAILED SEARCH SYNTAXES FOR THE DAS-44406-6 SOYBEAN	8
APPENDIX 2. ELIGIBILITY/INCLUSION CRITERIA	11
APPENDIX 3. ENTRIES RETRIEVED BY THE PERFORMED SEARCHES TO LITERATURE DATABASES FOR THE DAS-44406-6 SOYBEAN WITHIN THE INDICATED SEARCH PERIOD	12
APPENDIX 4. PUBLICATIONS SCREENED FOR RELEVANCE BASED ON THE FULL TEXT	28

1. Summary

An updated systematic search of peer-reviewed literature in line with the EFSA Guidance on conducting a systematic review (EFSA, 2010) and taking into account the explanatory note on literature searching conducted in the context of GMO applications (EFSA, 2019), was conducted with the following review question “Does DAS-44406-6 soybean and derived food/feed products, or the intended traits (the newly expressed protein(s)), have adverse effects on human and animal health and the environment in the scope of the authorisation?”.

The current systematic search complements the search previously performed in 2019. Unless outlined below, all portions of the search were conducted according to the methodologies outlined in the previous search.

The outcome of this analysis showed that one publication relevant for the review question was identified during the selected time period. No safety concerns were identified for DAS-44406-6 soybean by this literature search exercise.

2. Confirmation of the Suitability of the Search Strings

All portions of the search were conducted according to the methodologies outlined in the previous searches. It was confirmed that the search strategy utilized in the previous literature search report (2019) is still relevant and no updates were identified.

3. Results of the literature search exercise

3.1. Outcome of literature searches

In October 2020, searches against electronic bibliographic databases and manual searches in view of screening of reference lists were performed. The search process is reported in line with EFSA guidance (EFSA, 2010 Appendix B4(2)) in Table 2.

Table 1. Documenting and reporting the search process

Resources	Date of search	Period searched*	Other restrictions	Number of records retrieved
Web of Science Core collection ^{#§}	7 Oct 2020	2019-7 Oct 2020	None	70
CAB Abstracts ^{#§}	7 Oct 2020	2019-7 Oct 2020	None	36
MEDLINE ^{#§}	7 Oct 2020	2019-7 Oct 2020	None	32
Europe PMC ^{#§}	7 Oct 2020	2019-7 Oct 2020	None	13
Screening reference lists	7 Oct 2020	-	2019-7 Oct 2020 [§]	0 **

[#] A justification for choosing these databases was provided in Section 2.2 of the previous literature search report (2019). The combination of these sources allows having a broad coverage of publications related to GMO risk assessment.

[§] The search syntaxes used are reported in Appendix 1 for electronic bibliographic databases.

[§] The time period was applied post-hoc.

** Number of records screened on full text.

The publications retrieved across all methods of searching (Web of Science Core collection, CAB Abstracts, MEDLINE, Europe PMC, and screening of reference lists) can be found in Appendix 3.

In the framework of the reference list screening exercise, no detailed risk assessments regarding DAS-44406-6 soybean were retrieved that contained information on food and feed safety. Considering that no opinions were published within the selected time period no further screening was performed.

The publications grouped in the Endnote® library were deduplicated. Publications retrieved by the previous searches conducted in the frame of the 2019 annual monitoring report were also removed (see Appendix 3, Section 6).

The results of the publication selection process are presented in Table 2.

Table 2. Results of the publication selection process, for the review question

Review question: “Does DAS-44406-6 soybean and derived food/feed products, or the intended traits (the newly expressed protein(s)), have adverse effects on human and animal health and the environment in the scope of the authorisation?”	Number of records
Total number of publications retrieved after all searches of the scientific literature (excluding duplicates and publications retrieved by the previous searches conducted in the frame of the 2019 monitoring reports)	63
Number of publications excluded from the search results after rapid assessment for relevance based on title and abstract	54
Total number of full-text documents assessed in detail	9
Number of publications excluded from further consideration after detailed assessment for relevance based on full text	8
Total number of unobtainable/unclear publications	0
Total number of relevant publications	1

The 63 unique entries present in the Endnote database (Table 2) were manually screened for relevance to the review question by two independent reviewers using the a priori eligibility/inclusion criteria described in Appendix 2.

Entries that are deemed to be irrelevant based on title/abstract were not further retained. In cases where the title/abstract did not contain sufficient information, the publication was progressed to the second stage and assessed for relevance at the level of the full text (as listed in Appendix 4). The reason for excluding a result from the second screening is documented and a justification for not further assessing a reference is provided in Table 4.2 in Appendix 4. No unobtainable/unclear publications were identified (see Appendix 4, Table 4.3).

In this literature search exercise, one peer-reviewed publication relevant to the risk assessment of DAS-44406-6 soybean was identified (Cicchillo et al., 2020) (see Section **Error! Reference source not found.** and Table 4.1 in Appendix 4). Details are provided in **Error! Reference source not found.** in the format laid out by the Commission decision 2009/770/EC (EC, 2009).

Table 3: Review of relevant peer-reviewed publication: Food/Feed safety (Cicchillo et al., 2020)

Publication	Summary of research and results	Protection goal	Observed parameter	Adverse effects	Feedback on initial risk assessment
Cicchillo RM, Beeson WT, McCaskill DG, Shan G, Herman R and Walsh TA, 2020. Identification of iron-chelating phenolics contributing to seed coat coloration in soybeans (<i>Glycine max</i> (L.) Merr.) expressing aryloxyalkanoate dioxygenase-12. <i>Phytochemistry</i> 172, 11. ¹	As indicated by the authors, soybeans genetically modified to express aryloxyalkanoate dioxygenase-12 (AAD-12), an enzyme that confers tolerance to the herbicide 2,4-D, can sometimes exhibit a darker seed coat coloration than equivalent unmodified soybeans. The authors investigated the biochemical basis for this coloration “in a non-commercial transgenic event, DAS-411Ø4-7 that exhibited more pronounced AAD-12-associated seed coat coloration than the commercial event, DAS-444Ø6-6.” ² The authors report that “Analysis of color-enriched seed coat fractions from DAS-411Ø4-7 showed that the color was due to localized accumulation of iron-chelating phenolics, particularly the isoflavone genistin, that are associated with seed coat pectic polysaccharide and produce a brown chromophore. The association between genistin, iron, and pectic polysaccharide was characterized using a variety of analytical methods. Darker seeds from commercial soybean event DAS-444Ø6-6 also show higher genistin content localized to the darker colored portions of the seed coat (with no increase in whole seed genistin levels).”	Food/Feed safety	Darker seed coat coloration	None	No change

¹ This paper was included in the Review of literature of DAS-44406-6 soybean in the scope of the authorisation for food and feed uses, import and processing in the EU (2019 update), while still under review

² Text between double quotes is an excerpt from the above-mentioned paper.

4. Conclusion

One publication was identified as relevant for the molecular characterisation, food/feed and environmental safety of DAS-44406-6 soybean within the scope of the authorisation for the defined time period. No safety concerns have been identified for DAS-44406-6 soybean by this literature search exercise.

References

- Cicchillo RM, Beeson WT, McCaskill DG, Shan G, Herman R and Walsh TA, **2020**. Identification of iron-chelating phenolics contributing to seed coat coloration in soybeans (*Glycine max* (L.) Merr.) expressing aryloxyalkanoate dioxygenase-12. *Phytochemistry* 172, 11.
- EC, **2009**. Commission Decision 2009/770/EC of 13 October 2009 establishing standard reporting formats for presenting the monitoring results of the deliberate release into the environment of genetically modified organisms, as or in products, for the purpose of placing on the market, pursuant to Directive 2001/18/EC of the European Parliament and of the Council. *Official Journal of the European Union* 275, 9-27.
- EFSA, **2010**. Application of systematic review methodology to food and feed safety assessments to support decision making. *EFSA Journal* 8(6):1637. [90 pp.].
- EFSA, **2019**. Explanatory note on literature searching conducted in the context of GMO applications for (renewed) market authorisation and annual post-market environmental monitoring reports on GMOs authorised in the EU market. EFSA supporting publication 2019:EN-1614. [62 pp.].

Appendix 1. Detailed search syntaxes for the DAS-44406-6 soybean**Web of Science Core collection**

Set	Search query
Event #1	TS=(DAS44406* OR DAS-44406 OR DAS-444Ø6-6 OR DAS-444-circle-divide-6-6 OR DAS-444empty-set6-6 OR ((44406 OR Enlist*) AND (soy* OR soja* OR Glycine OR Dow OR Corteva OR herbicid*)))
Proteins #2	TS=((2m-epsps OR 2mepsps OR ((5-enolpyruvylshikimate-3-phosphate-synthase OR epsps OR 5-enol-pyruvyl-shikimate-3-phosphate-synthase OR EPSP-synthase) AND modified AND protein AND (maize OR corn OR zea OR mays)) OR (phosphinothricin AND (acetyltransferase OR acetyl-transferase)) OR (pat AND phosphinothricin) OR aad-12 OR aryloxyalkanoate-dioxygenase-12) AND (Streptomyces OR viridochromogenes OR Delftia OR acidovorans OR soy* OR soja* OR glycine OR (((herbicid* AND (genetical* NEAR/3 modif*)) OR GMHT) AND (crop OR plant OR food OR feed)) OR gmo OR gmos OR lmo OR lmos OR gm OR ge))
Traits #3	TS=((glyphosate* OR Roundup OR "Round-up" OR glyfosate* OR glyphosate* OR glifosate* OR ((2-4-D OR AOPP) AND herbicid*) OR 2-4-dichlorophenoxyacetic-acid OR 2-4-dichlorophenoxy-acetic-acid OR aryloxyphenoxypropionate OR aryloxyphenoxy-propionate OR (fop AND (herbicid* or aryloxyphen*)) OR quizalofop OR haloxyfop OR glufosinate* OR gluphosinate* OR (liberty* AND herbicid*)) AND (toler* OR resist* OR protect*) AND (soy* OR soja* OR Glycine OR max) AND (gmo OR gmos OR lmo OR lmos OR living-modified OR transgen* OR GMHT OR ((GM OR GE OR genetic*) NEAR/5 (modif* OR transform* OR manipul* OR engineer*))))
#4	#1 OR #2 OR #3
Reporting Period #5	PY=(2019-2100)
Final Results #6	#4 AND #5

CAB Abstracts

Set	Search query
Event #1	TS=(DAS44406* OR DAS-44406 OR DAS-444Ø6-6 OR DAS-444<o>6-6 OR ((44406 OR Enlist*) AND (soy* OR soja* OR Glycine OR Dow OR Corteva OR herbicid*)))
Proteins #2	TS=((2m-epsps OR 2mepsps OR ((5-enolpyruvylshikimate-3-phosphate-synthase OR epsps OR 5-enol-pyruvyl-shikimate-3-phosphate-synthase OR EPSP-synthase) AND modified AND protein AND (maize OR corn OR zea OR mays)) OR (phosphinothricin AND (acetyltransferase OR acetyl-transferase)) OR (pat AND phosphinothricin) OR aad-12 OR

	aryloxyalkanoate-dioxygenase-12) AND (Streptomyces OR viridochromogenes OR Delftia OR acidovorans OR soy* OR soja* OR glycine OR (((herbicid* AND (genetical* NEAR/3 modif*)) OR GMHT) AND (crop OR plant OR food OR feed)) OR lmo OR lmos OR ge OR "genetically engineered foods"))
Traits #3	TS=((glyphosate* OR Roundup OR "Round-up" OR glyfosate* OR glyphosate* OR glifosate* OR ((2-4-D OR AOPP) AND herbicid*) OR 2-4-dichlorophenoxyacetic-acid OR 2-4-dichlorophenoxy-acetic-acid OR aryloxyphenoxypropionate OR aryloxyphenoxy-propionate OR (fop AND (herbicid* or aryloxyphen*)) OR quizalofop OR haloxyfop OR glufosinate* OR gluphosinate* OR (liberty* AND herbicid*)) AND (toler* OR resist* OR protect*) AND (soy* OR soja* OR Glycine OR max) AND (GMHT OR transgen* OR engineer* OR lmo or lmos OR ge OR manipul* OR transform* OR "genetically engineered foods"))
#4	#1 OR #2 OR #3
Reporting Period #5	PY=(2019-2100)
Final Results #6	#4 AND #5

MEDLINE

Set	Search query
Event #1	TS=(DAS44406* OR DAS-44406 OR DAS-44406-6 OR ((44406 OR Enlist*) AND (soy* OR soja* OR Glycine OR Dow OR Corteva OR herbicid*)))
Proteins #2	TS=((2m-epsps OR 2mepsps OR ((5-enolpyruvylshikimate-3-phosphate-synthase OR epsps OR 5-enol-pyruvyl-shikimate-3-phosphate-synthase OR EPSP-synthase) AND modified AND protein AND (maize OR corn OR zea OR mays)) OR (phosphinothricin AND (acetyltransferase OR acetyl-transferase)) OR (pat AND phosphinothricin) OR aad-12 OR aryloxyalkanoate-dioxygenase-12) AND (Streptomyces OR viridochromogenes OR Delftia OR acidovorans OR soy* OR soja* OR glycine OR (((herbicid* AND (genetical* NEAR/3 modif*)) OR GMHT) AND (crop OR plant OR food OR feed)) OR lmo OR lmos OR ge OR "Food, Genetically Modified"))
Traits #3	TS=((glyphosate* OR Roundup OR "Round-up" OR glyfosate* OR glyphosate* OR glifosate* OR ((2-4-D OR AOPP) AND herbicid*) OR 2-4-dichlorophenoxyacetic-acid OR 2-4-dichlorophenoxy-acetic-acid OR aryloxyphenoxypropionate OR aryloxyphenoxy-propionate OR (fop AND (herbicid* or aryloxyphen*)) OR quizalofop OR haloxyfop OR glufosinate* OR gluphosinate* OR (liberty* AND herbicid*)) AND (toler* OR resist* OR protect*) AND (soy* OR soja* OR Glycine OR

	max) AND (GMHT OR transgen* OR engineer* OR lmo or lmos OR ge OR manipul* OR transform* OR "Food, Genetically Modified"))
#4	#1 OR #2 OR #3
Reporting Period #5	PY=(2019-2100)
Final Results #6	#4 AND #5

Europe PMC

(DAS44406 OR DAS44406 OR "das-44406" OR "das-44406" OR "44406 soy*" OR "44406 soy*" OR "soy* 44406" OR "soy* 44406" OR "Enlist E3") AND (FIRST_PDATE:[2019-01-01 TO 2020-12-31])

Appendix 2. Eligibility/Inclusion Criteria

Concept	Criteria
Population (taking into account scope of the authorisation)	<p>Publication addressing human and animal health, and/or the environment relevant for the scope of the authorisation.</p> <p>The pathways and level of exposure to the GMO, derived food/feed products, and the intended traits addressed in the study (as assessed under the Intervention/exposure part) are relevant for the intended uses of the GMO and derived food/feed products under regulatory review (e.g. in case of an authorisation for food, food, import, efficacy of the traits, pest susceptibility, etc. are not considered relevant).</p>
Intervention/exposure	DAS-44406-6 soybean and derived food/feed products, and/or the intended traits (the newly expressed protein(s)).
Intervention/exposure Plant species	In case of studies using GM plants, only studies using soybean are considered eligible. This criterion is not employed for studies regarding the newly expressed proteins.
Intervention/exposure Source organism of the protein	In case of publications using the protein of interest, only publications with the protein from the specific source organism will be considered eligible.
Comparator	If the study is a comparative study that uses plant material as test material, eligible publications must report a non-GM variety.
Outcomes	<p>Effects/impacts on human and animal health, and/or the environment are addressed.</p> <p>Publications addressing other issues such as benefits, socio-economics, ethics, crop protection, detection methods, efficacy, public perception and risk communication are to be excluded using this criterion, as they are not relevant to the risk assessment of GMOs.</p>
Reporting format	<p>Original/primary data are presented in the study. This permits the exclusion of publications that do not present original/primary data (e.g., reviews, editorial, position papers).</p> <p>However, risk assessments from relevant risk assessment bodies (excluding EFSA) will not be excluded.</p>

Appendix 3. Entries retrieved by the performed searches to literature databases for the DAS-44406-6 soybean within the indicated search period

Note: the numbering of the references in the different appendixes is independent of each other (e.g. a certain reference might be called EFSA 2020a in one appendix and EFSA 2020b in another)

1. Entries retrieved using Web of Science Core collection

- Amin MR, Oh SD and Suh SJ, 2020. Comparing the effects of GM and non-GM soybean varieties on non-target arthropods. *Entomological Research* 50, 423-432.
- Anastassiadou M, Brancato A, Cabrera LC, Ferreira L, Greco L, Jarrah S, Kazocina A, Leuschner R, Magrans JO, Miron I, Pedersen R, Raczyk M, Reich H, Ruocco S, Sacchi A, Santos M, Stanek A, Tarazona J, Theobald A, Verani A and European Food Safety Authority EFS, 2019. Setting an import tolerance for 2,4-D in soybeans. *Efsa Journal* 17, 20.
- Anderson JA, Mickelson J, Challender M, Moellring E, Sult T, TeRonde S, Walker C, Wang YW and Maxwell CA, 2020. Agronomic and compositional assessment of genetically modified DP23211 maize for corn rootworm control. *Gm Crops & Food-Biotechnology in Agriculture and the Food Chain* 11, 206-214.
- Bento CPM, van der Hoeven S, Yang XM, Riksen M, Mol HGJ, Ritsema CJ and Geissen V, 2019. Dynamics of glyphosate and AMPA in the soil surface layer of glyphosate-resistant crop cultivations in the loess Pampas of Argentina. *Environmental Pollution* 244, 323-331.
- Bish MD, Guinan PE and Bradley KW, 2019. Inversion Climatology in High-Production Agricultural Regions of Missouri and Implications for Pesticide Applications. *Journal of Applied Meteorology and Climatology* 58, 1973-1992.
- Bohn T and Millstone E, 2019. The Introduction of Thousands of Tonnes of Glyphosate in the food Chain-An Evaluation of Glyphosate Tolerant Soybeans. *Foods* 8, 14.
- Bonini EA, Marchiosi R, Zonetti PD, Zobiolo LHS and Ferrarese O, 2020. CHROMATOGRAPHIC DETERMINATION OF SHIKIMATE FOR IDENTIFICATION OF CONVENTIONAL SOYBEAN AND GLYPHOSATE RESISTANT SOYBEAN. *Bioscience Journal* 36, 383-389.
- Boonchaisri S, Rochfort S, Stevenson T and Dias DA, 2019. Recent developments in metabolomics-based research in understanding transgenic grass metabolism. *Metabolomics* 15, 19.
- Cardoso IS, Jakelaitis A, Marques KO, Guimaraes KC and Pereira LS, 2019. QUALITY OF SILAGE PRODUCED FROM INTERCROPPED CORN RR AND SOYBEANS RR. *Bioscience Journal* 35, 1886-1898.
- Carpentieri-Pipolo V, Lopes KBD and Degrassi G, 2019. Phenotypic and genotypic characterization of endophytic bacteria associated with transgenic and non-transgenic soybean plants. *Archives of Microbiology* 201, 1029-1045.
- Chorna IV, Dronik GB, Lukashiv TO and Yuzkova VD, 2019. Oxidatively modified proteins in kidneys of rats fed with glyphosate-resistant genetically modified soybean and the herbicide Roundup. *Regulatory Mechanisms in Biosystems* 10, 319-325.
- Cicchillo RM, Beeson WT, McCaskill DG, Shan G, Herman R and Walsh TA, 2020. Identification of iron-chelating phenolics contributing to seed coat coloration in soybeans (*Glycine max* (L.) Merr.) expressing aryloxyalkanoate dioxygenase-12. *Phytochemistry* 172, 11.
- De Carvalho SJP, Uzuele EL, Soares DJ, Ovejero RFL and Christoffoleti PJ, 2019. CONTROL OF GLYPHOSATE-RESISTANT VOLUNTEER MAIZE USING ACCase INHIBITING HERBICIDES. *Revista Caatinga* 32, 575-580.

- de Souza LT, Pereira J and de Oliveira SM, 2019. Transgenic events interference on maize morphological and productive attributes. *Revista Agrogeoambiental* 11, 35-44.
- Faraz L, Siddiqui MF, Galani S and Mehdi F, 2019. ASSESSING THE EFFECT OF PHYTOHORMONE ON GROWTH AND GERMINATION OF SOYBEAN GLYCINE MAX (L.) Merr. FROM COTYLEDONARY NODE. *Pakistan Journal of Botany* 51, 103-107.
- Farias ME, Marani MM, Ramirez D, Niebylski AM, Correa NM and Molina PG, 2020. Polyclonal antibody production anti Pc₃₁₂₋₃₂₄ peptide. Its potential use in electrochemical immunosensors for transgenic soybean detection. *Bioelectrochemistry* 131, 8.
- Fast BJ, Shan GM, Gampala SS and Herman R, 2020. Transgene expression in sprayed and non-sprayed herbicide-tolerant genetically engineered crops is equivalent. *Regulatory Toxicology and Pharmacology* 111, 8.
- Finley JW and Duke SO, 2020. Agnes Rimando, a Pioneer in the Fate of Glyphosate and Its Primary Metabolite in Plants. *Journal of Agricultural and Food Chemistry* 68, 5623-5630.
- Gallon M, Trezzi MM, Pagnoncelli FB, Pasini R, Viecelli M and Cavaleiro BM, 2019. CHEMICAL MANAGEMENT OF BROADLEAF BUTTONEWEED AND BRAZILIAN PUSLEY IN DIFFERENT APPLICATION METHODS. *Planta Daninha* 37, 11.
- Geng T, Wang YC, Liu L, Li B and Hill RC, 2019. Endogenous Allergens from Genetically Modified Soybean: Background, Assessment, and Quantification. In: *Current Challenges and Advancements in Residue Analytical Methods*. Eds Schoenau EA, Geng T, Hill R, Houston NL, Saha Mand Zhou X. Amer Chemical Soc, Washington, 73-94.
- Girgan C, Claassens S and Fourie H, 2020. Nematode assemblages and soil microbial communities in soils associated with glyphosate-resistant soybean. *South African Journal of Plant and Soil* 37, 11-22.
- Greenleaf M, 2020. Rubber and Carbon: Opportunity Costs, Incentives and Ecosystem Services in Acre, Brazil. *Development and Change* 51, 51-72.
- Guo BF, Hong HL, Han JN, Zhang LJ, Liu ZX, Guo Y and Qiu LJ, 2020. Development and identification of glyphosate-tolerant transgenic soybean via direct selection with glyphosate. *Journal of Integrative Agriculture* 19, 1186-1196.
- Karthik K, Nandiganti M, Thangaraj A, Singh S, Mishra P, Rathinam M, Sharma M, Singh NK, Dash PK and Sreevathsa R, 2020. Transgenic Cotton (*Gossypium hirsutum*L.) to Combat Weed Vagaries: Utility of an Apical Meristem-Targeted in planta Transformation Strategy to Introgress a Modified CP4-EPSPS Gene for Glyphosate Tolerance. *Frontiers in Plant Science* 11, 11.
- Khomenko YV, Ishchenko LM, Ishchenko VD, Midyk SV, Rybalchenko DY, Ushkalov VO and Spyrydonov VG, 2019. Development of ELISA Kit for Detection of Glyphosate-Resistant Genetically Modified Soybean. *Methods and Objects of Chemical Analysis* 14, 21-29.
- Kim HJ, Kim DY, Moon YS, Park IS, Park KW, Chung YS, Kim YJ, Nam KH and Kim CG, 2019. Gene flow from herbicide resistant transgenic soybean to conventional soybean and wild soybean. *Applied Biological Chemistry* 62, 8.
- Larue CT, Goley M, Shi L, Evdokimov AG, Sparks OC, Ellis C, Wollacott AM, Rydel TJ, Halls CE, Van Scoyoc B, Fu XR, Nageotte JR, Adio AM, Zheng MY, Sturman EJ, Garvey GS and Varagona MJ, 2019. Development of enzymes for robust aryloxyphenoxypropionate and synthetic auxin herbicide tolerance traits in maize and soybean crops. *Pest Management Science* 75, 2086-2094.

- Liu WX, Li L, Zhang Z, Dong M and Jin WJ, 2020. iTRAQ-based quantitative proteomic analysis of transgenic and non-transgenic maize seeds. *Journal of Food Composition and Analysis* 92, 11.
- Luan HX, Liao WL, Song YP, Niu HP, Hu T and Zhi HJ, 2020. Transgenic plant generated by RNAi-mediated knocking down of soybean Vma12 and soybean mosaic virus resistance evaluation. *AMB Express* 10, 10.
- Machado EP, Rodrigues GL, Somavilla JC, Fuhr FM, Zago SL, Marques LH, Santos AC, Nowatzki T, Dahmer ML, Omoto C and Bernardi O, Survival and development of *Spodoptera eridania*, *Spodoptera cosmioides* and *Spodoptera albula* (Lepidoptera: Noctuidae) on genetically-modified soybean expressing Cry1Ac and Cry1F proteins. *Pest Management Science* 7.
- Machado EP, Rodrigues GLD, Fuhr FM, Zago SL, Marques LH, Santos AC, Nowatzki T, Dahmer ML, Omoto C and Bernardi O, 2020. Cross-crop resistance of *Spodoptera frugiperda* selected on Bt maize to genetically-modified soybean expressing Cry1Ac and Cry1F proteins in Brazil. *Scientific Reports* 10, 9.
- Mangena P, 2019. A simplified in-planta genetic transformation in soybean. *Research Journal of Biotechnology* 14, 117-125.
- Marques KO, Jakelaitis A, Guimaraes KC, Pereira LS, Cardoso IS and Lima SF, 2019. Production, fermentation profile, and nutritional quality of silage from corn and soybean intercropping. *Semina-Ciencias Agrarias* 40, 3143-3155.
- Mbatyoti A, Daneel MS, Swart A, Marais M, De Waele D and Fourie H, 2019. Case study of effect of glyphosate application on plant-parasitic nematodes associated with a soybean-maize rotation system in South Africa. *South African Journal of Plant and Soil* 36, 389-392.
- Mbatyoti A, Daneel MS, Swart A, Marais M, De Waele D and Fourie H, 2020. Plant-parasitic nematode assemblages associated with glyphosate tolerant and conventional soybean cultivars in South Africa. *African Zoology* 55, 93-107.
- Mendes RR, Franchini LHM, Lucio FR, Zobiolo LHS and Oliveira RS, 2020. Aryloxyphenoxypropionates tolerant and non-tolerant corn: plant-back interval after acetyl-coA-carboxylase inhibitors applications. *Planta Daninha* 38, 8.
- Meyer CJ and Norsworthy JK, 2019. Influence of weed size on herbicide interactions for Enlist (TM) and Roundup Ready (R) Xtend (R) technologies. *Weed Technology* 33, 569-577.
- Miyazaki J, Bauer-Panskus A, Bohn T, Reichenbecher W and Then C, 2019. Insufficient risk assessment of herbicide-tolerant genetically engineered soybeans intended for import into the EU. *Environmental Sciences Europe* 31, 21.
- Naegeli H, Bresson JL, Dalmay T, Dewhurst IC, Epstein MM, Firbank L, Guerche P, Hejatko J, Moreno FJ, Mullins E, Nogu F, Rostoks N, Serrano JJS, Savoini G, Veromann E, Veronesi F, Alvarez-Alfageme F, Ardizzone M, Dumont AF, Devos Y, Gennaro A, Ruiz JAG, Lanzoni A, Neri FM, Paraskevopoulos K and Or EPGM, 2020. Assessment of genetically modified soybean SYHT0H2 for food and feed uses, import and processing, under Regulation (EC) No 1829/2003 (application EFSA-GMO-DE-2012-111). *Efsa Journal* 18, 29.
- Naegeli H, Bresson JL, Dalmay T, Dewhurst IC, Epstein MM, Firbank LG, Guerche P, Hejatko J, Moreno FJ, Mullins E, Nogue F, Rostoks N, Serrano JJS, Savoini G, Veromann E, Veronesi F, Alvarez F, Ardizzone M, De Sanctis G, Dumont A, Devos Y, Gennaro A, Ruiz JAG, Lanzoni A, Neri FM, Papadopoulou N, Paraskevopoulos K, Raffaello T and Modified EPG, 2020. Assessment of genetically modified soybean MON 87705 x MON 87708 x MON 89788, for food and feed uses, under Regulation (EC) No 1829/2003 (application EFSA-GMO-NL-2015-126). *Efsa*

- Journal 18, 36.
- Nandula VK, 2019. Herbicide Resistance Traits in Maize and Soybean: Current Status and Future Outlook. *Plants-Basel* 8, 9.
- Orazaly M, Florez-Palacios L, Manjarrez-Sandoval P, Mozzoni L, Dombek D, Wu CJ and Chen PY, 2019. Registration of 'UA 5715GT' Soybean Cultivar. *Journal of Plant Registrations* 13, 31-37.
- Pareddy D, Chennareddy S, Anthony G, Sardesai N, Mall T, Minnicks T, Karpova O, Clark L, Griffin D, Bishop B, Shumway N, Samuel P, Smith K and Sarria R, 2020. Improved soybean transformation for efficient and high throughput transgenic production. *Transgenic Research* 29, 267-281.
- Pereira JL, Pereira RR, Resende-Silva GA, Jakelaitis A, Silva AA and Picanco MC, 2020. GLYPHOSATE IMPACT ON ARTHROPODS ASSOCIATED TO ROUNDUP READY AND CONVENTIONAL SOYBEAN (*Glycine max* L.). *Planta Daninha* 38, 11.
- Petineli R, Moraes LAC, Heinrichs R, Moretti LG and Moreira A, Conventional and Transgenic Soybeans: Physiological and Nutritional Differences in Productivity under Sulfur Fertilization. *Communications in Soil Science and Plant Analysis* 9.
- Ranjan PN, Ram CJ, Anurag T, Nilesh J, Kumar PB, Suresh Y, Santosh K and Rahul K, 2020. Breeding for herbicide tolerance in crops: a review. *Research Journal of Biotechnology* 15, 154-162.
- Sarangi D and Jhala AJ, 2019. Palmer Amaranth (*Amaranthus palmeri*) and Velvetleaf (*Abutilon theophrasti*) Control in No-Tillage Conventional (Non-genetically engineered) Soybean Using Overlapping Residual Herbicide Programs. *Weed Technology* 33, 95-105.
- Sarangi D, Stephens T, Barker AL, Patterson EL, Gaines TA and Jhala AJ, 2019. Protoporphyrinogen oxidase (PPO) inhibitor-resistant waterhemp (*Amaranthus tuberculatus*) from Nebraska is multiple herbicide resistant: confirmation, mechanism of resistance, and management. *Weed Science* 67, 510-520.
- Seralini GE, 2020. Update on long-term toxicity of agricultural GMOs tolerant to roundup. *Environmental Sciences Europe* 32, 7.
- Shahid AA, Haider T, Samiullah TR, Ali MA, Bajwa KS, Rao AQ, Salisu IB and Husnain T, 2019. RISK ASSESSMENT OF TRANSGENIC COTTON HARBORING BT AND GLYPHOSATE RESISTANCE GENE ON FISH (*Labeo rohita*). *Journal of Animal and Plant Sciences* 29, 1761-1769.
- Shang Y, Zhang BY, Zhu LY, Huang KL and Xu WT, 2020. A novel quantitative technique in detecting stacked genetically modified plants by fluorescent-immunohistochemistry. *Journal of Food Composition and Analysis* 88, 5.
- Shi ZY, Zou SY, Lu C, Wu BZ, Huang KL, Zhao CH and He XY, 2019. Evaluation of the effects of feeding glyphosate-tolerant soybeans (CP4 EPSPS) on the testis of male Sprague-Dawley rats. *Gm Crops & Food-Biotechnology in Agriculture and the Food Chain* 10, 181-190.
- Shin WR, Lee MJ, Sekhon SS, Kim JH, Kim SC, Cho BK, Ahn JY and Kim YN, 2020. Aptamer-linked immobilized sorbent assay for detecting GMO marker, phosphinothricin acetyltransferase (PAT). *Molecular & Cellular Toxicology* 16, 253-261.
- Singh M, Randhawa G, Bhoge RK, Singh S, Kak A and Sangwan O, Monitoring Adventitious Presence of Transgenes in Cotton Collections from Genebank and Experimental Plots: Ensuring GM-Free Conservation and Cultivation of Genetic Resources. *Agricultural Research* 8.
- Smith A, Soltani N, Kaastra AJ, Hooker DC, Robinson DE and Sikkema PH, 2019. Annual

- weed management in isoxaflutole-resistant soybean using a two-pass weed control strategy. *Weed Technology* 33, 411-425.
- Soga K, Kimata S, Narushima J, Sato S, Sato E, Mano J, Takabatake R, Kitta K, Kawakami H, Akiyama H, Kondo K and Nakamura K, 2020. Development and Testing of an Individual Kernel Detection System for Genetically Modified Soybean Events in Non-identity-preserved Soybean Samples. *Biological & Pharmaceutical Bulletin* 43, 1259-1266.
- Striegel A, Lawrence NC, Knezevic SZ, Krumm JT, Hein G and Jhala AJ, 2020. Control of glyphosate/glufosinate-resistant volunteer corn in corn resistant to aryloxyphenoxypropionates. *Weed Technology* 34, 309-317.
- Swatkoski SJ and Croley TR, 2020. Screening of Processed Foods for Transgenic Proteins from Genetically Engineered Plants Using Targeted Mass Spectrometry. *Analytical Chemistry* 92, 3455-3462.
- Takahashi TA, Nishimura G, Carneiro E and Foerster LA, 2019. First record of *Peridroma saucia* Hubner (Lepidoptera: Noctuidae) in transgenic soybeans. *Revista Brasileira De Entomologia* 63, 199-201.
- Takano HK, Beffa R, Preston C, Westra P and Dayan FE, 2020. Glufosinate enhances the activity of protoporphyrinogen oxidase inhibitors. *Weed Science* 68, 324-332.
- Torres A, Reyes-Perez JJ, Marquez-Hernandez C, Estrada-Arellano J, Esparza-Rivera JR, Preciado-Rangel P and Murillo-Amador B, 2019. Potential Transference of CP4 EPSPS to Weed Species from Genetically Modified *Gossypium hirsutum* in Northern Mexico. *Notulae Botanicae Horti Agrobotanici Cluj-Napoca* 47, 294-299.
- Vieira BC, Butts TR, Rodrigues AO, Schleier JJ, Fritz BK and Kruger GR, 2020. Particle drift potential of glyphosate plus 2,4-D choline pre-mixture formulation in a low-speed wind tunnel. *Weed Technology* 34, 520-527.
- Wells ML, Prostko EP and Carter OW, 2019. Simulated Single Drift Events of 2,4-D and Dicamba on Pecan Trees. *Horttechnology* 29, 360-366.
- Wen ZL, Yang MK, Du MH, Zhong ZZ, Lu YT, Wang GH, Hua XM, Fazal A, Mu CH, Yan SF, Zhen Y, Yang RW, Qi JL, Hong Z, Lu GH and Yang YH, 2019. Enrichments/Depletion of Root-Associated Bacteria Related to Plant Growth and Nutrition Caused by the Growth of an EPSPS-Transgenic Maize Line in the Field. *Frontiers in microbiology* 10, 15.
- Wheeler TA, Siders K, Monclova-Santana C and Dever JK, 2020. The relationship between commercial cotton cultivars with varying *Meloidogyne incognita* resistance genes and yield. *Journal of nematology* 52, 8.
- Xia YM, Chen FS, Liu KL, Zhang LF, Duan XJ, Zhang X and Zhu ZY, 2019. Compositional differences between conventional Chinese and genetically modified Roundup Ready soybeans. *Crop & Pasture Science* 70, 526-534.
- Xiao PY, Liu Y and Cao YP, 2019. Overexpression of G10-EPSPS in soybean provides high glyphosate tolerance. *Journal of Integrative Agriculture* 18, 1851-1858.
- Zanatta CB, Benevenuto RF, Nodari RO and Agapito-Tenfen SZ, 2020. Stacked genetically modified soybean harboring herbicide resistance and insecticide rCry1Ac shows strong defense and redox homeostasis disturbance after glyphosate-based herbicide application. *Environmental Sciences Europe* 32, 17.
- Zeng HJ, Wang JB, Jia JW, Wu GG, Yang QW, Liu XF and Tang XM, 2021. Development of a lateral flow test strip for simultaneous detection of BT-Cry1Ab, BT-Cry1Ac and CP4 EPSPS proteins in genetically modified crops. *Food Chemistry* 335, 7.
- Zhou CZ, Luo XX, Chen NY, Zhang LL and Gao JT, 2020. C-P Natural Products as Next-Generation Herbicides: Chemistry and Biology of Glufosinate. *Journal of Agricultural and Food Chemistry* 68, 3344-3353.

2. **Entries retrieved using CAB Abstracts**

- Akram MZ, Firincioglu SY, Jalal H, Dogan SC, Shahid S and Ali BS, 2019. Effects of feeding genetically modified crops to domestic animals: a review. *Turkish Journal of Agriculture - Food Science and Technology* 7, 110-118.
- Anastassiadou M, Brancato A, Cabrera LC, Ferreira L, Greco L, Jarrah S, Kazocina A, Leuschner R, Magrans JO, Miron I, Pedersen R, Raczyk M, Reich H, Ruocco S, Sacchi A, Santos M, Stanek A, Tarazona J, Theobald A and Verani A, 2019. Setting an import tolerance for 2,4-D in soyabeans. *Efsa Journal* 17, e05660.
- Bento CPM, Hoeven Svd, Yang X, Riksen MMJPM, Mol HGJ, Ritsema CJ and Geissen V, 2019. Dynamics of glyphosate and AMPA in the soil surface layer of glyphosate-resistant crop cultivations in the loess Pampas of Argentina. *Environmental Pollution* 244, 323-331.
- Bomfim NCP, Silva MS, Camargos LS and Martins AR, 2019. Ultrastructural and histochemical changes in glyphosate-tolerant soybean leaves exposed to glyphosate. *Journal of Agricultural Science (Toronto)* 11, 243-256.
- Bonini EA, Marchiosi R, Zonetti PdC, Zobiolo LHS and Ferrarese Filho O, 2020. Chromatographic determination of shikimate for identification of conventional soybean and glyphosate resistant soybean. *Bioscience Journal* 36, 383-389.
- Carpentieri-Pipolo V, Lopes KBdA and Degrassi G, 2019. Phenotypic and genotypic characterization of endophytic bacteria associated with transgenic and non-transgenic soybean plants. *Archives of Microbiology* 201, 1029-1045.
- Chang L, Liu W and Zhang F, 2019. Effects of severe drought and glyphosate stress on physiological characteristics and protein expression of photosystem II in genetically modified soybean. *Plant Diseases and Pests* 10, 22-26.
- Chorna I, 2019. Structural-functional state of kidneys of rats of two generations when using glyphosate-resistant genetically modified soy and herbicide Roundup. *ScienceRise: Biological Science* 25-29, 42-43.
- Chorna IV, Dronik GB, Lukashiv TO and Yuzkova VD, 2019. Oxidatively modified proteins in kidneys of rats fed with glyphosate-resistant genetically modified soybean and the herbicide Roundup. *Regulatory Mechanisms in Biosystems* 10, 319-325.
- Elumalai S, Samson N, Prairie A, Bradley D, Richbourg L, Strebe T, Liebler T, Wang D and Que Q, 2019. A study on optimization of pat gene expression cassette for maize transformation. *Molecular Biology Reports* 46, 3009-3017.
- Farias ME, Marani MM, Ramirez D, Niebylski AM, Correa NM and Molina PG, 2020. Polyclonal antibody production anti Pc_312-324 peptide. Its potential use in electrochemical immunosensors for transgenic soybean detection. *Bioelectrochemistry* 131, Article 107397.
- Finley JW and Duke SO, 2020. Agnes Rimando, a pioneer in the fate of glyphosate and its primary metabolite in plants. *Journal of Agricultural and Food Chemistry* 68, 5623-5630.
- Gallon M, Trezzi MM, Pagnoncelli Junior FB, Pasini R, Viecelli M and Cavalheiro BM, 2019. Chemical management of broadleaf buttonweed and Brazilian pusley in different application methods. *Planta Daninha* 37.
- Girgan C, Claassens S and Fourie H, 2020. Nematode assemblages and soil microbial communities in soils associated with glyphosate-resistant soybean. *South African Journal of Plant and Soil* 37, 11-22.
- Guo B, Hong H, Han J, Zhang L, Liu Z, Guo Y and Qiu L, 2020. Development and identification of glyphosate-tolerant transgenic soybean via direct selection with glyphosate. *Journal of Integrative Agriculture* 19, 1186-1196.

- Larue CT, Goley M, Shi L, Evdokimov AG, Sparks OC, Ellis C, Wollacott AM, Rydel TJ, Halls CE, Scoyoc Bv, Fu X, Nageotte JR, Adio AM, Zheng M, Sturman EJ, Garvey GS and Varagona MJ, 2019. Development of enzymes for robust aryloxyphenoxypropionate and synthetic auxin herbicide tolerance traits in maize and soybean crops. *Pest Management Science* 75, 2086-2094.
- Lubna F, Siddiqui MF, Saddia G and Faisal M, 2019. Assessing the effect of phytohormone on growth and germination of soybean *Glycine max* (L.) Merr. from cotyledonary node. *Pakistan Journal of Botany* 51, 103-107.
- Mbatyoti A, Daneel MS, Swart A, Marais M, Waele Dd and Fourie H, 2019. Case study of effect of glyphosate application on plant-parasitic nematodes associated with a soybean-maize rotation system in South Africa. *South African Journal of Plant and Soil* 36, 389-392.
- Meyer CJ and Norsworthy JK, 2019. Influence of weed size on herbicide interactions for EnlistTM and Roundup Ready Xtend technologies. *Weed Technology* 33, 569-577.
- Meyer CJ, Norsworthy JK and Kruger GR, 2020. What antagonistic interactions mean for Enlist and Roundup Ready Xtend technologies. *Crop, Forage & Turfgrass Management* 6.
- Naegeli H, Bresson JL, Dalmay T, Dewhurst IC, Epstein MM, Firbank LG, Guerche P, Hejatko J, Moreno FJ, Mullins E, Nogue F, Rostoks N, Serrano JJS, Savoini G, Veromann E, Veronesi F, Alvarez F, Ardizzone M, Dumont AF, Devos Y, Gennaro A, Ruiz JAG, Lanzoni A, Neri FM and Paraskevopoulos K, 2020. Assessment of genetically modified soybean SYHT0H2 for food and feed uses, import and processing, under Regulation (EC) No 1829/2003 (application EFSA-GMO-DE-2012-111). *Efsa Journal* 18, e05946.
- Naegeli H, Bresson JL, Dalmay T, Dewhurst IC, Epstein MM, Firbank LG, Guerche P, Hejatko J, Moreno FJ, Mullins E, Nogue F, Rostoks N, Serrano JJS, Savoini G, Veromann E, Veronesi F, Alvarez F, Ardizzone M, Sanctis Gd, Dumont A, Devos Y, Gennaro A, Ruiz JAG, Lanzoni A, Neri FM, Papadopoulou N and et al., 2020. Assessment of genetically modified soybean MON 87705 * MON 87708 * MON 89788, for food and feed uses, under regulation (ec) no 1829/2003 (application EFSA -GMO -NL -2015-126). *Efsa Journal* 18.
- Nandula VK, 2019. Herbicide resistance traits in maize and soybean: current status and future outlook. *Plants* 8, 337.
- Pareddy D, Chennareddy S, Anthony G, Sardesai N, Mall T, Minnicks T, Karpova O, Clark L, Griffin D, Bishop B, Shumway N, Samuel P, Smith K and Sarria R, 2020. Improved soybean transformation for efficient and high throughput transgenic production. *Transgenic Research* 29, 267-281.
- Paull J, 2019. The failures of genetically modified organisms (GMOS): resistance, regulation, and rejection. *AGROFOR International Journal* 4, 139-152.
- Sarangi D, Stephens T, Barker AL, Patterson EL, Gaines TA and Jhala AJ, 2019. Protoporphyrinogen oxidase (PPO) inhibitor-resistant waterhemp (*Amaranthus tuberculatus*) from Nebraska is multiple herbicide resistant: confirmation, mechanism of resistance, and management. *Weed Science* 67, 510-520.
- Shi Z, Zou S, Lu C, Wu B, Huang K, Zhao C and He X, 2019. Evaluation of the effects of feeding glyphosate-tolerant soybeans (CP4 EPSPS) on the testis of male Sprague-Dawley rats. *GM Crops and Food: Biotechnology in Agriculture and the Food Chain* 10, 181-190.
- Smith A, Soltani N, Hooker DC, Robinson DE, Kaastra AC and Sikkema PH, 2019. Activity of isoxaflutole plus metribuzin tankmixes in isoxaflutole-resistant soybean. *American Journal of Plant Sciences* 10, 1350-1373.

- Smith A, Soltani N, Kaastra AJ, Hooker DC, Robinson DE and Sikkema PH, 2019. Annual weed management in isoxaflutole-resistant soybean using a two-pass weed control strategy. *Weed Technology* 33, 411-425.
- Sumer S, Rahamkulov I, Demirel U, Caliskan ME and Bakhsh A, 2019. Production of transgenic potato lines expressing herbicidal gene (CP4-EPSP synthase) *Herbisite dayanıklılık geni (CP4-EPSP sentez) iceren transgenik patates hatlarinin gelistirilmesi*. *Ege Universitesi Ziraat Fakultesi Dergisi* 56, 35-43.
- Sun M, Li H and Jaisi DP, 2019. Degradation of glyphosate and bioavailability of phosphorus derived from glyphosate in a soil-water system. *Water Research (Oxford)* 163, 114840.
- Tao B, Cao B, Han Y, Zhao B and Qiu L, 2019. Effects of glyphosate resistant soybean pyramided with G2-EPSPS and GAT on soil microenvironment. *Chinese Journal of Biological Control* 35, 203-208.
- Wang X, Zhang X, Yang J, Liu X, Song Y and Wang Z, 2019. Genetic variation assessment of stacked-trait transgenic maize via conventional breeding. *Bmc Plant Biology* 19, (7 August 2019).
- Weng J, Lou Y, Xu J, He J, Zhang X and Liu Y, 2019. Acquisition and functional validation of transgenic AM79-EPSPS glyphosate-resistant soybean (*Glycine max L.*). *Journal of Zhejiang University (Agriculture and Life Sciences)* 45, 675-684.
- Xia Y, Chen F, Liu K, Zhang L, Duan X, Zhang X and Zhu Z, 2019. Compositional differences between conventional Chinese and genetically modified Roundup Ready soybeans. *Crop & Pasture Science* 70, 526-534.
- Xiao P, Liu Y and Cao Y, 2019. Overexpression of g10-EPSPS in soybean provides high glyphosate tolerance. *Journal of Integrative Agriculture* 18, 1851-1858.

3. **Entries retrieved using MEDLINE**

- Anderson JA, Mickelson J, Challender M, Moellring E, Sult T, TeRonde S, Walker C, Wang Y and Maxwell CA, 2020. Agronomic and compositional assessment of genetically modified DP23211 maize for corn rootworm control. *GM crops & food* 11, 206-214.
- Boonchaisri S, Rochfort S, Stevenson T and Dias DA, 2019. Recent developments in metabolomics-based research in understanding transgenic grass metabolism. *Metabolomics : Official journal of the Metabolomic Society* 15, 47.
- Carlson AB, Mukerji P, Mathesius CA, Huang E, Herman RA, Hoban D, Thurman JD and Roper JM, 2020. DP-202216-6 maize does not adversely affect rats in a 90-day feeding study. *Regulatory toxicology and pharmacology : RTP* 117, 104779.
- Carpentieri-Pipolo V, de Almeida Lopes KB and Degrassi G, 2019. Phenotypic and genotypic characterization of endophytic bacteria associated with transgenic and non-transgenic soybean plants. *Archives of Microbiology* 201, 1029-1045.
- Chekan JR, Ongpipattanakul C, Wright TR, Zhang B, Bollinger JM, Jr., Rajakovich LJ, Krebs C, Cicchillo RM and Nair SK, 2019. Molecular basis for enantioselective herbicide degradation imparted by aryloxyalkanoate dioxygenases in transgenic plants. *Proceedings of the National Academy of Sciences of the United States of America* 116, 13299-13304.
- Cicchillo RM, Beeson WT, McCaskill DG, Shan G, Herman RA and Walsh TA, 2020. Identification of iron-chelating phenolics contributing to seed coat coloration in soybeans (*Glycine max (L.) Merr.*) expressing aryloxyalkanoate dioxygenase-12. *Phytochemistry* 172, 112279.
- Cordova Lopez AM, Sarmiento RA, de Souza Saraiva A, Pereira RR, Soares AMVM and Pestana JLT, 2019. Exposure to Roundup affects behaviour, head regeneration and reproduction of the freshwater planarian *Girardia tigrina*. *The Science of the total*

- environment 675, 453-461.
- de Souza JS, Laureano-Melo R, Herai RH, da Conceicao RR, Oliveira KC, da Silva IDCG, Dias-da-Silva MR, Romano RM, Romano MA, Maciel RMdB, Chiamolera MI and Giannocco G, 2019. Maternal glyphosate-based herbicide exposure alters antioxidant-related genes in the brain and serum metabolites of male rat offspring. *Neurotoxicology* 74, 121-131.
- Dong Y, Ng E, Lu J, Fenwick T, Tao Y, Bertain S, Sandoval M, Bermudez E, Hou Z, Patten P, Lassner M and Siehl D, 2019. Desensitizing plant EPSP synthase to glyphosate: Optimized global sequence context accommodates a glycine-to-alanine change in the active site. *The Journal of biological chemistry* 294, 716-725.
- Farias ME, Marani MM, Ramirez D, Niebylski AM, Correa NM and Molina PG, 2020. Polyclonal antibody production anti Pc_312-324 peptide. Its potential use in electrochemical immunosensors for transgenic soybean detection. *Bioelectrochemistry (Amsterdam, Netherlands)* 131, 107397.
- Finley JW and Duke SO, 2020. Agnes Rimando, a Pioneer in the Fate of Glyphosate and Its Primary Metabolite in Plants. *Journal of Agricultural and Food Chemistry* 68, 5623-5630.
- Grube M, Kalnenieks U and Muter O, 2019. Metabolic response of bacteria to elevated concentrations of glyphosate-based herbicide. *Ecotoxicology and Environmental Safety* 173, 373-380.
- Karthik K, Nandiganti M, Thangaraj A, Singh S, Mishra P, Rathinam M, Sharma M, Singh NK, Dash PK and Sreevathsa R, 2020. Transgenic Cotton (*Gossypium hirsutum* L.) to Combat Weed Vagaries: Utility of an Apical Meristem-Targeted in planta Transformation Strategy to Introduce a Modified CP4-EPSPS Gene for Glyphosate Tolerance. *Frontiers in Plant Science* 11, 768.
- Larue CT, Goley M, Shi L, Evdokimov AG, Sparks OC, Ellis C, Wollacott AM, Rydel TJ, Halls CE, Van Scoyoc B, Fu X, Nageotte JR, Adio AM, Zheng M, Sturman EJ, Garvey GS and Varagona MJ, 2019. Development of enzymes for robust aryloxyphenoxypropionate and synthetic auxin herbicide tolerance traits in maize and soybean crops. *Pest Management Science* 75, 2086-2094.
- Luan H, Liao W, Song Y, Niu H, Hu T and Zhi H, 2020. Transgenic plant generated by RNAi-mediated knocking down of soybean Vma12 and soybean mosaic virus resistance evaluation. *AMB Express* 10, 62.
- Machado EP, Dos S Rodrigues Junior GL, Fuhr FM, Zago SL, Marques LH, Santos AC, Nowatzki T, Dahmer ML, Omoto C and Bernardi O, 2020. Cross-crop resistance of Spodoptera frugiperda selected on Bt maize to genetically-modified soybean expressing Cry1Ac and Cry1F proteins in Brazil. *Scientific Reports* 10, 10080.
- Machado EP, Dos S Rodrigues Junior GL, Somavilla JC, Fuhr FM, Zago SL, Marques LH, Santos AC, Nowatzki T, Dahmer ML, Omoto C and Bernardi O, 2020. Survival and development of Spodoptera eridania, Spodoptera cosmioides and Spodoptera albula (Lepidoptera: Noctuidae) on genetically-modified soybean expressing Cry1Ac and Cry1F proteins. *Pest Management Science*.
- Moraes JS, da Silva Nornberg BF, Castro MRd, Vaz BDS, Mizuschima CW, Marins LFF and Martins CdMG, 2020. Zebrafish (*Danio rerio*) ability to activate ABC transporters after exposure to glyphosate and its formulation Roundup Transorb. *Chemosphere* 248, 125959.
- Nandula VK, 2019. Herbicide Resistance Traits in Maize and Soybean: Current Status and Future Outlook. *Plants (Basel, Switzerland)* 8.
- Pan L, Yu Q, Han H, Mao L, Nyporko A, Fan L, Bai L and Powles S, 2019. Aldo-keto Reductase Metabolizes Glyphosate and Confers Glyphosate Resistance in

- Echinochloa colona. Plant physiology 181, 1519-1534.
- Pareddy D, Chennareddy S, Anthony G, Sardesai N, Mall T, Minnick T, Karpova O, Clark L, Griffin D, Bishop B, Shumway N, Samuel P, Smith K and Sarria R, 2020. Improved soybean transformation for efficient and high throughput transgenic production. Transgenic Research 29, 267-281.
- Perry MJ, Mandrioli D, Belpoggi F, Manservigi F, Panzacchi S and Irwin C, 2019. Historical evidence of glyphosate exposure from a US agricultural cohort. Environmental health : a global access science source 18, 42.
- Shi Z, Zou S, Lu C, Wu B, Huang K, Zhao C and He X, 2019. Evaluation of the effects of feeding glyphosate-tolerant soybeans (CP4 EPSPS) on the testis of male Sprague-Dawley rats. GM crops & food 10, 181-190.
- Sivamani E, Nalapalli S, Prairie A, Bradley D, Richbourg L, Strebe T, Liebler T, Wang D and Que Q, 2019. A study on optimization of pat gene expression cassette for maize transformation. Molecular Biology Reports 46, 3009-3017.
- Steinberg P, van der Voet H, Goedhart PW, Kleter G, Kok EJ, Pla M, Nadal A, Zeljenkova D, Alacova R, Babincova J, Rollerova E, Jadudova S, Kebis A, Szabova E, Tulinska J, Liskova A, Takacsova M, Mikusova ML, Krivosikova Z, Spok A, Racovita M, de Vriend H, Alison R, Alison C, Baumgartner W, Becker K, Lempp C, Schmicke M, Schrenk D, Potting A, Schiemann J and Wilhelm R, 2019. Lack of adverse effects in subchronic and chronic toxicity/carcinogenicity studies on the glyphosate-resistant genetically modified maize NK603 in Wistar Han RCC rats. Archives of Toxicology 93, 1095-1139.
- Sun M, Li H and Jaisi DP, 2019. Degradation of glyphosate and bioavailability of phosphorus derived from glyphosate in a soil-water system. Water research 163, 114840.
- Swatkoski SJ and Croley TR, 2020. Screening of Processed Foods for Transgenic Proteins from Genetically Engineered Plants Using Targeted Mass Spectrometry. Analytical Chemistry 92, 3455-3462.
- Vicini JL, Reeves WR, Swarhout JT and Karberg KA, 2019. Glyphosate in livestock: feed residues and animal health1. Journal of Animal Science 97, 4509-4518.
- Wang L, Peng R, Tian Y, Gao J, Wang B and Yao Q, 2019. A thermostable 5-enolpyruvylshikimate-3-phosphate synthase from Thermotoga maritima enhances glyphosate tolerance in Escherichia coli and transgenic Arabidopsis. Extremophiles : life under extreme conditions 23, 659-667.
- Wheeler TA, Siders K, Monclova-Santana C and Dever JK, 2020. The relationship between commercial cotton cultivars with varying Meloidogyne incognita resistance genes and yield. Journal of nematology 52, 1-8.
- Yang L, Guo M, Han C, Li Y, Mao H, Zhao J, Chen C, Shi L and Zhuo Q, 2020. Immune function effect of F3 rats fed with genetically modified maize harboring Cry1Ab and epsps genes. Wei sheng yan jiu = Journal of hygiene research 49, 569-573.
- Zeng H, Wang J, Jia J, Wu G, Yang Q, Liu X and Tang X, 2021. Development of a lateral flow test strip for simultaneous detection of BT-Cry1Ab, BT-Cry1Ac and CP4 EPSPS proteins in genetically modified crops. Food Chemistry 335, 127627.

4. **Entries retrieved using Europe PMC**

- Beckie HJ, Ashworth MB and Flower KC, 2019. Herbicide Resistance Management: Recent Developments and Trends. In: Plants (Basel, Switzerland).
- Bøhn T and Millstone E, 2019. The Introduction of Thousands of Tonnes of Glyphosate in the food Chain-An Evaluation of Glyphosate Tolerant Soybeans. In: Foods (Basel, Switzerland).
- Broothaerts W, Cordeiro F, Corbisier P, Robouch P and Emons H, 2020. Log transformation

- of proficiency testing data on the content of genetically modified organisms in food and feed samples: is it justified? *Analytical and bioanalytical chemistry* 412, 1129-1136.
- Broothaerts W, Cordeiro F, Robouch P and Emons H, 2020. Ten years of proficiency testing reveals an improvement in the analytical performance of EU National Reference Laboratories for genetically modified food and feed. *Food Control* 114.
- Chekan JR, Ongpipattanakul C, Wright TR, Zhang B, Bollinger JM, Rajakovich LJ, Krebs C, Cicchillo RM and Nair SK, 2019. Molecular basis for enantioselective herbicide degradation imparted by aryloxyalkanoate dioxygenases in transgenic plants. *Proceedings of the National Academy of Sciences of the United States of America* 116, 13299-13304.
- Cicchillo RM, Beeson WT, McCaskill DG, Shan G, Herman RA and Walsh TA, 2020. Identification of iron-chelating phenolics contributing to seed coat coloration in soybeans (*Glycine max* (L.) Merr.) expressing aryloxyalkanoate dioxygenase-12. *Phytochemistry* 172, 112279.
- De Cerqueira DT, Fast BJ, Silveira AC and Herman RA, 2019. Transgene-product expression levels in genetically engineered breeding stacks are equivalent to those of the single events. *GM crops & food* 10, 35-43.
- European Food Safety A, Anastassiadou M, Brancato A, Carrasco Cabrera L, Ferreira L, Greco L, Jarrah S, Kazocina A, Leuschner R, Magrans JO, Miron I, Pedersen R, Raczky M, Reich H, Ruocco S, Sacchi A, Santos M, Stanek A, Tarazona J, Theobald A and Verani A, 2019. Setting an import tolerance for 2,4-D in soybeans. In: EFSA journal European Food Safety Authority. p e05660.
- Machado EP, Dos S Rodrigues Junior GL, Führ FM, Zago SL, Marques LH, Santos AC, Nowatzki T, Dahmer ML, Omoto C and Bernardi O, 2020. Cross-crop resistance of *Spodoptera frugiperda* selected on Bt maize to genetically-modified soybean expressing Cry1Ac and Cry1F proteins in Brazil. In: *Scientific Reports*. p 10080.
- Machado EP, Dos S Rodrigues Junior GL, Somavilla JC, Führ FM, Zago SL, Marques LH, Santos AC, Nowatzki T, Dahmer ML, Omoto C and Bernardi O, 2020. Survival and development of *Spodoptera eridania*, *Spodoptera cosmioides* and *Spodoptera albula* (Lepidoptera: Noctuidae) on genetically-modified soybean expressing Cry1Ac and Cry1F proteins. *Pest Management Science*.
- Matsushita A, Goto H, Takahashi Y, Tsuda M and Ohsawa R, 2020. Consideration of familiarity accumulated in the confined field trials for environmental risk assessment of genetically modified soybean (*Glycine max*) in Japan. *Transgenic Research* 29, 229-242.
- Nandula VK, 2019. Herbicide Resistance Traits in Maize and Soybean: Current Status and Future Outlook. In: *Plants* (Basel, Switzerland).
- Verginelli D, Paternò A, De Marchis ML, Quarchioni C, Vinciguerra D, Bonini P, Peddis S, Fusco C, Misto M, Marfoglia C, Pomilio F and Marchesi U, 2020. Development and comparative study of a pat/bar real-time PCR assay for integrating the screening strategy of a GMO testing laboratory. *Journal of the Science of Food and Agriculture* 100, 2121-2129.

5. Entries retrieved using reference lists of opinions of regulatory bodies and screened on full text³

None

³ The time-period is applied post-hoc as described in Table 2

6. New entries retrieved using all search strategies (excluding duplicates and studies retrieved by the previous search conducted in 2019)

- Akram MZ, Firincioglu SY, Jalal H, Dogan SC, Shahid S and Ali BS, 2019. Effects of feeding genetically modified crops to domestic animals: a review. *Turkish Journal of Agriculture - Food Science and Technology* 7, 110-118.
- Amin MR, Oh SD and Suh SJ, 2020. Comparing the effects of GM and non-GM soybean varieties on non-target arthropods. *Entomological Research* 50, 423-432.
- Anderson JA, Mickelson J, Challender M, Moellring E, Sult T, TeRonde S, Walker C, Wang YW and Maxwell CA, 2020. Agronomic and compositional assessment of genetically modified DP23211 maize for corn rootworm control. *Gm Crops & Food-Biotechnology in Agriculture and the Food Chain* 11, 206-214.
- Bohn T and Millstone E, 2019. The Introduction of Thousands of Tonnes of Glyphosate in the food Chain-An Evaluation of Glyphosate Tolerant Soybeans. *Foods* 8, 14.
- Bonini EA, Marchiosi R, Zonetti PD, Zobiolo LHS and Ferrarese O, 2020. CHROMATOGRAPHIC DETERMINATION OF SHIKIMATE FOR IDENTIFICATION OF CONVENTIONAL SOYBEAN AND GLYPHOSATE RESISTANT SOYBEAN. *Bioscience Journal* 36, 383-389.
- Broothaerts W, Cordeiro F, Corbisier P, Robouch P and Emons H, 2020. Log transformation of proficiency testing data on the content of genetically modified organisms in food and feed samples: is it justified? *Analytical and bioanalytical chemistry* 412, 1129-1136.
- Broothaerts W, Cordeiro F, Robouch P and Emons H, 2020. Ten years of proficiency testing reveals an improvement in the analytical performance of EU National Reference Laboratories for genetically modified food and feed. *Food control* 114.
- Cardoso IS, Jakelaitis A, Marques KO, Guimaraes KC and Pereira LS, 2019. QUALITY OF SILAGE PRODUCED FROM INTERCROPPED CORN RR AND SOYBEANS RR. *Bioscience Journal* 35, 1886-1898.
- Carlson AB, Mukerji P, Mathesius CA, Huang E, Herman RA, Hoban D, Thurman JD and Roper JM, 2020. DP-202216-6 maize does not adversely affect rats in a 90-day feeding study. *Regulatory toxicology and pharmacology : RTP* 117, 104779.
- Chekan JR, Ongpipattanakul C, Wright TR, Zhang B, Bollinger JM, Jr., Rajakovich LJ, Krebs C, Cicchillo RM and Nair SK, 2019. Molecular basis for enantioselective herbicide degradation imparted by aryloxyalkanoate dioxygenases in transgenic plants. *Proceedings of the National Academy of Sciences of the United States of America* 116, 13299-13304.
- Cicchillo RM, Beeson WT, McCaskill DG, Shan G, Herman R and Walsh TA, 2020. Identification of iron-chelating phenolics contributing to seed coat coloration in soybeans (*Glycine max* (L.) Merr.) expressing aryloxyalkanoate dioxygenase-12. *Phytochemistry* 172, 11.
- De Cerqueira DT, Fast BJ, Silveira AC and Herman RA, 2019. Transgene-product expression levels in genetically engineered breeding stacks are equivalent to those of the single events. *GM crops & food* 10, 35-43.
- de Souza JS, Laureano-Melo R, Herai RH, da Conceicao RR, Oliveira KC, da Silva IDCG, Dias-da-Silva MR, Romano RM, Romano MA, Maciel RMdB, Chiamolera MI and Giannocco G, 2019. Maternal glyphosate-based herbicide exposure alters antioxidant-related genes in the brain and serum metabolites of male rat offspring. *Neurotoxicology* 74, 121-131.
- de Souza LT, Pereira J and de Oliveira SM, 2019. Transgenic events interference on maize morphological and productive attributes. *Revista Agrogeoambiental* 11, 35-44.
- Fast BJ, Shan GM, Gampala SS and Herman R, 2020. Transgene expression in sprayed and

- non-sprayed herbicide-tolerant genetically engineered crops is equivalent. *Regulatory Toxicology and Pharmacology* 111, 8.
- Finley JW and Duke SO, 2020. Agnes Rimando, a Pioneer in the Fate of Glyphosate and Its Primary Metabolite in Plants. *Journal of Agricultural and Food Chemistry* 68, 5623-5630.
- Geng T, Wang YC, Liu L, Li B and Hill RC, 2019. Endogenous Allergens from Genetically Modified Soybean: Background, Assessment, and Quantification. In: *Current Challenges and Advancements in Residue Analytical Methods*. Eds Schoenau EA, Geng T, Hill R, Houston NL, Saha Mand Zhou X. Amer Chemical Soc, Washington, 73-94.
- Girgan C, Claassens S and Fourie H, 2020. Nematode assemblages and soil microbial communities in soils associated with glyphosate-resistant soybean. *South African Journal of Plant and Soil* 37, 11-22.
- Greenleaf M, 2020. Rubber and Carbon: Opportunity Costs, Incentives and Ecosystem Services in Acre, Brazil. *Development and Change* 51, 51-72.
- Guo BF, Hong HL, Han JN, Zhang LJ, Liu ZX, Guo Y and Qiu LJ, 2020. Development and identification of glyphosate-tolerant transgenic soybean via direct selection with glyphosate. *Journal of Integrative Agriculture* 19, 1186-1196.
- Karthik K, Nandiganti M, Thangaraj A, Singh S, Mishra P, Rathinam M, Sharma M, Singh NK, Dash PK and Sreevathsa R, 2020. Transgenic Cotton (*Gossypium hirsutum*L.) to Combat Weed Vagaries: Utility of an Apical Meristem-Targeted in planta Transformation Strategy to Introgress a Modified CP4-EPSPS Gene for Glyphosate Tolerance. *Frontiers in Plant Science* 11, 11.
- Khomenko YV, Ishchenko LM, Ishchenko VD, Midyk SV, Rybalchenko DY, Ushkalov VO and Spyrydonov VG, 2019. Development of ELISA Kit for Detection of Glyphosate-Resistant Genetically Modified Soybean. *Methods and Objects of Chemical Analysis* 14, 21-29.
- Liu WX, Li L, Zhang Z, Dong M and Jin WJ, 2020. iTRAQ-based quantitative proteomic analysis of transgenic and non-transgenic maize seeds. *Journal of Food Composition and Analysis* 92, 11.
- Luan HX, Liao WL, Song YP, Niu HP, Hu T and Zhi HJ, 2020. Transgenic plant generated by RNAi-mediated knocking down of soybean Vma12 and soybean mosaic virus resistance evaluation. *Amb Express* 10, 10.
- Lubna F, Siddiqui MF, Saddia G and Faisal M, 2019. Assessing the effect of phytohormone on growth and germination of soybean *Glycine max* (L.) Merr. from cotyledonary node. *Pakistan Journal of Botany* 51, 103-107.
- Machado EP, Rodrigues GL, Somavilla JC, Fuhr FM, Zago SL, Marques LH, Santos AC, Nowatzki T, Dahmer ML, Omoto C and Bernardi O, Survival and development of *Spodoptera eridania*, *Spodoptera cosmioides* and *Spodoptera albula* (Lepidoptera: Noctuidae) on genetically-modified soybean expressing Cry1Ac and Cry1F proteins. *Pest Management Science* 7.
- Machado EP, Rodrigues GLD, Fuhr FM, Zago SL, Marques LH, Santos AC, Nowatzki T, Dahmer ML, Omoto C and Bernardi O, 2020. Cross-crop resistance of *Spodoptera frugiperda* selected on Bt maize to genetically-modified soybean expressing Cry1Ac and Cry1F proteins in Brazil. *Scientific Reports* 10, 9.
- Matsushita A, Goto H, Takahashi Y, Tsuda M and Ohsawa R, 2020. Consideration of familiarity accumulated in the confined field trials for environmental risk assessment of genetically modified soybean (*Glycine max*) in Japan. *Transgenic Research* 29, 229-242.
- Mbatyoti A, Daneel MS, Swart A, Marais M, De Waele D and Fourie H, 2020. Plant-

- parasitic nematode assemblages associated with glyphosate tolerant and conventional soybean cultivars in South Africa. *African Zoology* 55, 93-107.
- Mendes RR, Franchini LHM, Lucio FR, Zobiolo LHS and Oliveira RS, 2020. Aryloxyphenoxypropionates tolerant and non-tolerant corn: plant-back interval after acetyl-coA-carboxylase inhibitors applications. *Planta Daninha* 38, 8.
- Meyer CJ, Norsworthy JK and Kruger GR, 2020. What antagonistic interactions mean for Enlist and Roundup Ready Xtend technologies. *Crop, Forage & Turfgrass Management* 6.
- Miyazaki J, Bauer-Panskus A, Bohn T, Reichenbecher W and Then C, 2019. Insufficient risk assessment of herbicide-tolerant genetically engineered soybeans intended for import into the EU. *Environmental Sciences Europe* 31, 21.
- Moraes JS, da Silva Nornberg BF, Castro MRd, Vaz BDS, Mizuschima CW, Marins LFF and Martins CdMG, 2020. Zebrafish (*Danio rerio*) ability to activate ABC transporters after exposure to glyphosate and its formulation Roundup Transorb. *Chemosphere* 248, 125959.
- Naegeli H, Bresson JL, Dalmay T, Dewhurst IC, Epstein MM, Firbank L, Guerche P, Hejatko J, Moreno FJ, Mullins E, Nogu F, Rostoks N, Serrano JJS, Savoini G, Veromann E, Veronesi F, Alvarez-Alfageme F, Ardizzone M, Dumont AF, Devos Y, Gennaro A, Ruiz JAG, Lanzoni A, Neri FM, Paraskevopoulos K and Or EPGM, 2020. Assessment of genetically modified soybean SYHT0H2 for food and feed uses, import and processing, under Regulation (EC) No 1829/2003 (application EFSA-GMO-DE-2012-111). *Efsa Journal* 18, 29.
- Naegeli H, Bresson JL, Dalmay T, Dewhurst IC, Epstein MM, Firbank LG, Guerche P, Hejatko J, Moreno FJ, Mullins E, Nogue F, Rostoks N, Serrano JJS, Savoini G, Veromann E, Veronesi F, Alvarez F, Ardizzone M, De Sanctis G, Dumont A, Devos Y, Gennaro A, Ruiz JAG, Lanzoni A, Neri FM, Papadopoulou N, Paraskevopoulos K, Raffaello T and Modified EPG, 2020. Assessment of genetically modified soybean MON 87705 x MON 87708 x MON 89788, for food and feed uses, under Regulation (EC) No 1829/2003 (application EFSA-GMO-NL-2015-126). *Efsa Journal* 18, 36.
- Pan L, Yu Q, Han H, Mao L, Nyporko A, Fan L, Bai L and Powles S, 2019. Aldo-keto Reductase Metabolizes Glyphosate and Confers Glyphosate Resistance in *Echinochloa colona*. *Plant physiology* 181, 1519-1534.
- Pareddy D, Chennareddy S, Anthony G, Sardesai N, Mall T, Minnicks T, Karpova O, Clark L, Griffin D, Bishop B, Shumway N, Samuel P, Smith K and Sarria R, 2020. Improved soybean transformation for efficient and high throughput transgenic production. *Transgenic Research* 29, 267-281.
- Paull J, 2019. The failures of genetically modified organisms (GMOS): resistance, regulation, and rejection. *AGROFOR International Journal* 4, 139-152.
- Pereira JL, Pereira RR, Resende-Silva GA, Jakelaitis A, Silva AA and Picanco MC, 2020. GLYPHOSATE IMPACT ON ARTHROPODS ASSOCIATED TO ROUNDUP READY AND CONVENTIONAL SOYBEAN (*Glycine max* L.). *Planta Daninha* 38, 11.
- Perry MJ, Mandrioli D, Belpoggi F, Manservigi F, Panzacchi S and Irwin C, 2019. Historical evidence of glyphosate exposure from a US agricultural cohort. *Environmental health : a global access science source* 18, 42.
- Petineli R, Moraes LAC, Heinrichs R, Moretti LG and Moreira A, Conventional and Transgenic Soybeans: Physiological and Nutritional Differences in Productivity under Sulfur Fertilization. *Communications in Soil Science and Plant Analysis* 9.
- Ranjan PN, Ram CJ, Anurag T, Nilesh J, Kumar PB, Suresh Y, Santosh K and Rahul K,

2020. Breeding for herbicide tolerance in crops: a review. *Research Journal of Biotechnology* 15, 154-162.
- Seralini GE, 2020. Update on long-term toxicity of agricultural GMOs tolerant to roundup. *Environmental Sciences Europe* 32, 7.
- Shang Y, Zhang BY, Zhu LY, Huang KL and Xu WT, 2020. A novel quantitative technique in detecting stacked genetically modified plants by fluorescent-immunohistochemistry. *Journal of Food Composition and Analysis* 88, 5.
- Shin WR, Lee MJ, Sekhon SS, Kim JH, Kim SC, Cho BK, Ahn JY and Kim YN, 2020. Aptamer-linked immobilized sorbent assay for detecting GMO marker, phosphinothricin acetyltransferase (PAT). *Molecular & Cellular Toxicology* 16, 253-261.
- Singh M, Randhawa G, Bhoge RK, Singh S, Kak A and Sangwan O, Monitoring Adventitious Presence of Transgenes in Cotton Collections from Genebank and Experimental Plots: Ensuring GM-Free Conservation and Cultivation of Genetic Resources. *Agricultural Research* 8.
- Soga K, Kimata S, Narushima J, Sato S, Sato E, Mano J, Takabatake R, Kitta K, Kawakami H, Akiyama H, Kondo K and Nakamura K, 2020. Development and Testing of an Individual Kernel Detection System for Genetically Modified Soybean Events in Non-identity-preserved Soybean Samples. *Biological & Pharmaceutical Bulletin* 43, 1259-1266.
- Steinberg P, van der Voet H, Goedhart PW, Kleter G, Kok EJ, Pla M, Nadal A, Zeljenkova D, Alacova R, Babincova J, Rollerova E, Jadudova S, Kebis A, Szabova E, Tulinska J, Liskova A, Takacsova M, Mikusova ML, Krivosikova Z, Spok A, Racovita M, de Vriend H, Alison R, Alison C, Baumgartner W, Becker K, Lempp C, Schmicke M, Schrenk D, Potting A, Schiemann J and Wilhelm R, 2019. Lack of adverse effects in subchronic and chronic toxicity/carcinogenicity studies on the glyphosate-resistant genetically modified maize NK603 in Wistar Han RCC rats. *Archives of toxicology* 93, 1095-1139.
- Striegel A, Lawrence NC, Knezevic SZ, Krumm JT, Hein G and Jhala AJ, 2020. Control of glyphosate/glufosinate-resistant volunteer corn in corn resistant to aryloxyphenoxypropionates. *Weed Technology* 34, 309-317.
- Sumer S, Rahamkulov I, Demirel U, Caliskan ME and Bakhsh A, 2019. Production of transgenic potato lines expressing herbicidal gene (CP4-EPSP synthase) *Herbisite dayanıklilik geni (CP4-EPSP sentez) iceren transgenik patates hatlarinin gelistirilmesi*. *Ege Universitesi Ziraat Fakultesi Dergisi* 56, 35-43.
- Swatkoski SJ and Croley TR, 2020. Screening of Processed Foods for Transgenic Proteins from Genetically Engineered Plants Using Targeted Mass Spectrometry. *Analytical Chemistry* 92, 3455-3462.
- Takano HK, Beffa R, Preston C, Westra P and Dayan FE, 2020. Glufosinate enhances the activity of protoporphyrinogen oxidase inhibitors. *Weed Science* 68, 324-332.
- Tao B, Cao B, Han Y, Zhao B and Qiu L, 2019. Effects of glyphosate resistant soybean pyramided with G2-EPSPS and GAT on soil microenvironment. *Chinese Journal of Biological Control* 35, 203-208.
- Verginelli D, Paternò A, De Marchis ML, Quarchioni C, Vinciguerra D, Bonini P, Peddis S, Fusco C, Misto M, Marfoglia C, Pomilio F and Marchesi U, 2020. Development and comparative study of a pat/bar real-time PCR assay for integrating the screening strategy of a GMO testing laboratory. *Journal of the science of food and agriculture* 100, 2121-2129.
- Vicini JL, Reeves WR, Swarouth JT and Karberg KA, 2019. Glyphosate in livestock: feed residues and animal health1. *Journal of animal science* 97, 4509-4518.

- Vieira BC, Butts TR, Rodrigues AO, Schleier JJ, Fritz BK and Kruger GR, 2020. Particle drift potential of glyphosate plus 2,4-D choline pre-mixture formulation in a low-speed wind tunnel. *Weed Technology* 34, 520-527.
- Wang L, Peng R, Tian Y, Gao J, Wang B and Yao Q, 2019. A thermostable 5-enolpyruvylshikimate-3-phosphate synthase from *Thermotoga maritima* enhances glyphosate tolerance in *Escherichia coli* and transgenic *Arabidopsis*. *Extremophiles : life under extreme conditions* 23, 659-667.
- Weng J, Lou Y, Xu J, He J, Zhang X and Liu Y, 2019. Acquisition and functional validation of transgenic AM79-EPSPS glyphosate-resistant soybean (*Glycine max* L.). *Journal of Zhejiang University (Agriculture and Life Sciences)* 45, 675-684.
- Wheeler TA, Siders K, Monclova-Santana C and Dever JK, 2020. The relationship between commercial cotton cultivars with varying *Meloidogyne incognita* resistance genes and yield. *Journal of Nematology* 52, 8.
- Yang L, Guo M, Han C, Li Y, Mao H, Zhao J, Chen C, Shi L and Zhuo Q, 2020. Immune function effect of F3 rats fed with genetically modified maize harboring Cry1Ab and epsps genes. *Wei sheng yan jiu = Journal of hygiene research* 49, 569-573.
- Zanatta CB, Benevenuto RF, Nodari RO and Agapito-Tenfen SZ, 2020. Stacked genetically modified soybean harboring herbicide resistance and insecticide rCry1Ac shows strong defense and redox homeostasis disturbance after glyphosate-based herbicide application. *Environmental Sciences Europe* 32, 17.
- Zeng HJ, Wang JB, Jia JW, Wu GG, Yang QW, Liu XF and Tang XM, 2021. Development of a lateral flow test strip for simultaneous detection of BT-Cry1Ab, BT-Cry1Ac and CP4 EPSPS proteins in genetically modified crops. *Food Chemistry* 335, 7.
- Zhou CZ, Luo XX, Chen NY, Zhang LL and Gao JT, 2020. C-P Natural Products as Next-Generation Herbicides: Chemistry and Biology of Glufosinate. *Journal of Agricultural and Food Chemistry* 68, 3344-3353.

Appendix 4. Publications screened for relevance based on the full text

Table 4.1. Report of all relevant publications retrieved after detailed assessment of full-text documents for relevance

Category of information/ data requirement(s)	Reference (Author, year, title, source)
Food/Feed Safety	Cicchillo RM, Beeson WT, McCaskill DG, Shan G, Herman R and Walsh TA, 2020. Identification of iron-chelating phenolics contributing to seed coat coloration in soybeans (<i>Glycine max</i> (L.) Merr.) expressing aryloxyalkanoate dioxygenase-12. <i>Phytochemistry</i> 172, 11.
Molecular characterisation of the genetic modification of GMO	De Cerqueira DT, Fast BJ, Silveira AC and Herman RA, 2019. Transgene-product expression levels in genetically engineered breeding stacks are equivalent to those of the single events. <i>GM crops & food</i> 10, 35-43.

Table 4.2. Report of publications excluded from the risk assessment after detailed assessment of full-text documents

Reference (Author, year, title, source)	Reason(s) for exclusion based on eligibility/inclusion criteria
Carlson AB, Mukerji P, Mathesius CA, Huang E, Herman RA, Hoban D, Thurman JD and Roper JM, 2020. DP-202216-6 maize does not adversely affect rats in a 90-day feeding study. <i>Regulatory toxicology and pharmacology</i> : RTP 117, 104779.	Intervention/exposure (not on DAS-44406-6 soybean)
De Cerqueira DT, Fast BJ, Silveira AC and Herman RA, 2019. Transgene-product expression levels in genetically engineered breeding stacks are equivalent to those of the single events. <i>GM crops & food</i> 10, 35-43.	Outcome (correlation between expression levels in stack vs single event)
Fast BJ, Shan GM, Gampala SS and Herman R, 2020. Transgene expression in sprayed and non-sprayed herbicide-tolerant genetically engineered crops is equivalent. <i>Regulatory Toxicology and Pharmacology</i> 111, 8.	Intervention/exposure (not on DAS-44406-6 soybean, expression levels on higher order stack DAS-81419–2xDAS-44406-6)
Geng T, Wang YC, Liu L, Li B and Hill RC, 2019. Endogenous Allergens from Genetically Modified Soybean: Background, Assessment, and Quantification. In: <i>Current Challenges and Advancements in Residue Analytical Methods</i> . Eds Schoenau EA, Geng T, Hill R, Houston NL, Saha Mand Zhou X. Amer Chemical Soc, Washington, 73-94.	Reporting format (Not a primary study: book chapter)
Miyazaki J, Bauer-Panskus A, Bohn T, Reichenbecher W and Then C, 2019. Insufficient risk assessment of herbicide-tolerant genetically engineered soybeans intended for import into the EU. <i>Environmental Sciences Europe</i> 31, 21.	Reporting format (Not a primary study: review)
Naegeli H, Bresson JL, Dalmay T, Dewhurst IC, Epstein MM, Firbank L, Guerche P, Hejatko J, Moreno FJ, Mullins E, Nogu F, Rostoks N, Serrano JJS, Savoini G, Veromann E, Veronesi F, Alvarez-Alfageme F, Ardizzone M, Dumont AF, Devos Y,	Reporting format (Not a primary study) ⁴

⁴ The EFSA GMO Panel concludes that SYHT0H2 soybean (containing PAT) is as safe as its conventional counterpart and the tested non-GM soybean reference varieties with respect to potential effects on human and animal health and the environment

Gennaro A, Ruiz JAG, Lanzoni A, Neri FM, Paraskevopoulos K and Or EPGM, 2020a. Assessment of genetically modified soybean SYHT0H2 for food and feed uses, import and processing, under Regulation (EC) No 1829/2003 (application EFSA-GMO-DE-2012-111). Efsa Journal 18, 29.	
Naegeli H, Bresson JL, Dalmay T, Dewhurst IC, Epstein MM, Firbank LG, Guerche P, Hejatko J, Moreno FJ, Mullins E, Nogue F, Rostoks N, Serrano JJS, Savoini G, Veromann E, Veronesi F, Alvarez F, Ardizzone M, De Sanctis G, Dumont A, Devos Y, Gennaro A, Ruiz JAG, Lanzoni A, Neri FM, Papadopoulou N, Paraskevopoulos K, Raffaello T and Modified EPG, 2020b. Assessment of genetically modified soybean MON 87705 x MON 87708 x MON 89788, for food and feed uses, under Regulation (EC) No 1829/2003 (application EFSA-GMO-NL-2015-126). Efsa Journal 18, 36.	Reporting format (Not a primary study)
Steinberg P, van der Voet H, Goedhart PW, Kleter G, Kok EJ, Pla M, Nadal A, Zeljenkova D, Alacova R, Babincova J, Rollerova E, Jadudova S, Kebis A, Szabova E, Tulinska J, Liskova A, Takacsova M, Mikusova ML, Krivosikova Z, Spok A, Racovita M, de Vriend H, Alison R, Alison C, Baumgartner W, Becker K, Lempp C, Schmicke M, Schrenk D, Poting A, Schiemann J and Wilhelm R, 2019. Lack of adverse effects in subchronic and chronic toxicity/carcinogenicity studies on the glyphosate-resistant genetically modified maize NK603 in Wistar Han RCC rats. Archives of toxicology 93, 1095-1139.	Intervention/exposure (not on DAS-44406-6 soybean)

Table 4.3. Report of unobtainable/unclear publications

Reference (Author, year, title, source)	Description of (unsuccessful) methods used to try to obtain a copy of the publication
None	Not applicable