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Evaluation of confirmatory data following the Article 12 MRL review for S-metolachlor

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Abstract

The applicant Syngenta Crop Protection AG submitted a request to the competent national authority in Germany to evaluate the confirmatory data that were identified for S-metolachlor in the framework of the maximum residue level (MRL) review under Article 12 of Regulation (EC) No 396/2005 as not available. To address the data gaps, a new freezer storage stability study for S-metolachlor in commodities with high acid content was submitted. However, the data gap on storage stability was considered only partially addressed for strawberries because, in the absence of information on the storage time interval of the samples of the residue trials performed on strawberries, no conclusion on the validity of these trials could be drawn. The data gap on the lack of trials to support the good agricultural practice (GAP) on pineapples was not addressed. Consequently, the existing tentative MRLs for strawberries and pineapple cannot be confirmed and EFSA recommends lowering these MRLs to the enforcement limit of quantification (LOQ). Since a new lower LOQ for enforcement in high acid content commodities of 0.01 mg/kg has been validated, it is proposed to change the existing MRL value from 0.05* to 0.01* mg/kg for these two commodities.

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Summary

In 2012, when the European Food Safety Authority (EFSA) reviewed the existing maximum residue levels (MRLs) for S-metolachlor according to Article 12 of Regulation (EC) No 396/2005, EFSA identified some information as unavailable (data gaps) and derived tentative MRLs for those uses which were not fully supported by data but for which no risk to consumers was identified. The following data gaps were noted:

- 1) Storage stability data for commodities with a high acid content;
- 2) Four supervised residue trials supporting the outdoor good agricultural practice (GAP) on pineapple;

Tentative MRL proposals of 0.05* mg/kg (at the LOQ) for strawberries and pineapples have been implemented in the MRL legislation by Commission Regulation (EU) No 1317/2013, including footnotes related to data gaps number 1 and 2, indicating the type of confirmatory data that should be provided by a party having an interest in maintaining the proposed tentative MRL by 17 December 2015.

In accordance with the agreed procedure set out in the working document SANTE/10235/2016, Syngenta Crop Protection AG submitted an application to the competent national authority in Germany (rapporteur Member State, RMS) to evaluate the confirmatory data identified during the MRL review. It should be noted that this application was initially submitted with the application for the renewal of approval of the active substance S-metolachlor in accordance with Article 1 of Regulation (EU) No 844/2012. Therefore, the two applications were assessed jointly by the RMS in the draft renewal assessment report (RAR), which was received by EFSA on 6 September 2018.

Subsequently, a peer review of the pesticide risk assessment on the RMS evaluation was conducted by EFSA in accordance with Article 13 of Commission Implementing Regulation (EU) No 844/2012, as amended by Commission Implementing Regulation (EU) No 2018/1659. In November 2020, EFSA requested the applicant to provide further information on the endocrine-disrupting (ED) properties of S-metolachlor in accordance with Article 13(3a) of Implementing Regulation (EU) No 844/2012. Since the art. 12 Confirmatory data could be assessed separately the applicant decided to split the two processes.

However, in July 2022, EFSA informed the Commission that several critical areas of concern related to the protection of the environment have been identified, concerning contamination of groundwater and risks to mammals. Therefore, on 27 September 2022, prior to completion of the peer review process, EFSA was mandated by the European Commission to deliver its conclusion on the available outcomes of the assessments in all areas except the assessment of the endocrine-disrupting (ED) properties.

EFSA published on 28 February 2023 the conclusion on the peer review of the pesticide risk assessment of the active substance S-metolachlor excluding the assessment of the ED properties (EFSA, 2023a). A draft implementing regulation proposing a non-renewal of the approval of S-metolachlor is currently under discussion at the Standing Committee on Plants, Animals, Food and Feed (PAFF). EFSA was requested on 28 July 2023 to proceed to finalise and publish a revised conclusion on the peer review of the pesticide risk assessment of the active substance S-metolachlor, including also the assessment of ED properties in relation to human health.

In the framework of the art. 12 Confirmatory data, a new freezer storage stability was assessed. No data on pineapples were submitted in relation to the data gap number 2 identified in the MRL review. EFSA identified a need for further information. Therefore, an EFSA request to provide additional information was sent to the applicant on 1 March 2023 in form of a clock stop letter. On 21 March 2023, the applicant informed EFSA that no additional data will be submitted in the framework of this application. Consequently, EFSA acknowledged this statement and proceeded with drafting of the Reasoned Opinion.

As for the two commodities under assessment (strawberries and pineapples), the data gaps are not deemed fully addressed, the current MRLs at the LOQ of 0.05* mg/kg are still deemed tentative. EFSA recommends maintaining these MRLs at the lowest achievable enforcement LOQ. Since a new lower LOQ for enforcement in high acid content commodities of 0.01 mg/kg has been validated during the assessment of the renewal of the approval of the active substance, it is proposed to change the existing MRL value from 0.05* to 0.01* mg/kg for these two commodities.

The summary table below provides an overview of the assessment of art. 12 Confirmatory data and the recommended MRL modifications to Regulation (EU) No 396/2005.

Furthermore, considering that a new lower LOQ for enforcement in plant commodities of 0.01 mg/kg has been validated during the renewal of the approval of the active substance, risk managers may also consider lowering the existing MRLs, which are currently set at the LOQ of 0.05* mg/kg, to the value of 0.01* mg/kg for those commodities for which there are currently no authorised uses of S-metolachlor as plant protection product.

Code ^(a)	Commodity	Existing MRL ^(b)	Data gap(s) Art.12 Review	Proposed MRL	Conclusion/recommendation
Enforcement residue definition: Metolachlor and S-metolachlor (metolachlor including other mixtures of constituent isomers including S-metolachlor (sum of isomers))					
0152000	Strawberries	0.05* (ft 1)	Footnote related to data gap No 1 (Storage stability data for commodities with a high acid content)	0.01*	A new storage stability study was submitted. This study is valid and demonstrates the stability of S-metolachlor for 24 months in high acid content commodities. However, the storage time interval of the samples of the residue trials performed on strawberries was not reported. Thus, no conclusion on the validity of these trials could be drawn. Consequently, the data gap is deemed partially addressed. The existing MRL should be lowered to the enforcement LOQ (0.01 mg/kg).
0163080	Pineapples	0.05* (ft 2)	Footnote related to data gap No 1 (Storage stability data for commodities with a high acid content) and No 2 (4 supervised residue trials supporting the outdoor GAP on pineapple)	0.01*	The data gap on storage stability is addressed by a new valid study demonstrating the stability of S-metolachlor for a period of 24 months in high acid content commodities. However, residue trials supporting the use on pineapples were not submitted, and therefore, this data gap is not addressed. The existing MRL should be lowered to the enforcement LOQ (0.01 mg/kg).

MRL: maximum residue level; NEU: northern Europe; SEU: southern Europe; GAP: Good Agricultural Practice.

*: Indicates that the MRL is set at the limit of analytical quantification (LOQ).

(a): Commodity code number according to Annex I of Regulation (EC) No 396/2005.

(b): Existing EU MRL and corresponding footnote on confirmatory data.

ft 1: The European Food Safety Authority identified some information on storage stability as unavailable. When re-viewing the MRL, the Commission will take into account the information referred to in the first sentence, if it is submitted by 17 December 2015, or, if that information is not submitted by that date, the lack of it

ft 2: The European Food Safety Authority identified some information on residue trials and storage stability as unavailable. When re-viewing the MRL, the Commission will take into account the information referred to in the first sentence, if it is submitted by 17 December 2015, or, if that information is not submitted by that date, the lack of it.

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Assessment

The review of existing maximum residue levels (MRLs) for the active substance S-metolachlor according to Article 12 of Regulation (EC) No 396/2005¹ (MRL review) has been performed in 2012 (EFSA, 2012). European Food Safety Authority (EFSA) identified some information as unavailable (data gaps) and derived tentative MRLs for those uses not fully supported by data but for which no risk to consumers was identified. The list of good agricultural practices (GAPs) assessed in the framework of the MRL review that were not fully supported by data and for which confirmatory data were requested are listed in Appendix A.

Following the review of existing MRLs, the legal limits have been modified by Commission Regulation (EU) No 1317/2013², including footnotes for tentative MRLs that specified the type of information that was identified as missing. The tentative MRL of 0.05 mg/kg (at the LOQ) was implemented for strawberries and pineapples. Any party having an interest in maintaining the proposed tentative MRL was requested to address the confirmatory data by 17 December 2015.

In accordance with the agreed procedure set out in the working document SANTE/10235/2016 (European Commission, 2020), Syngenta Crop Protection AG submitted an application to the competent national authority in Germany (rapporteur Member State, RMS) to evaluate the confirmatory data identified during the MRL review. It should be noted that this application was initially submitted with the application for the renewal of approval of the active substance S-metolachlor in accordance with Article 1 of Regulation (EU) No 844/2012. Therefore, the two applications were assessed jointly by the RMS in the draft renewal assessment report (RAR), which was received by EFSA on 6 September 2018.

Subsequently, a peer review of the pesticide risk assessment on the RMS evaluation was conducted by EFSA in accordance with Article 13 of Commission Implementing Regulation (EU) No 844/2012, as amended by Commission Implementing Regulation (EU) No 2018/1659. In November 2020, EFSA requested the applicant to provide further information on the ED properties of S-metolachlor in accordance with Article 13(3a) of Implementing Regulation (EU) No 844/2012. Since the art. 12 Confirmatory data could be assessed separately the applicant decided to split the two processes.

However, in July 2022, EFSA informed the Commission that several critical areas of concern related to the protection of the environment have been identified, concerning contamination of groundwater and risks to mammals. Therefore, on 27 September 2022, prior to completion of the peer review process, EFSA was mandated by the European Commission to deliver its conclusion on the available outcomes of the assessments in all areas except the assessment of the ED properties.

EFSA published on 28 February 2023 the conclusion on the peer review of the pesticide risk assessment of the active substance S-metolachlor excluding the assessment of the ED properties (EFSA, 2023a). A draft implementing regulation proposing a non-renewal of the approval of S-metolachlor is currently under discussion at the Standing Committee on Plants, Animals, Food and Feed (PAFF). EFSA was requested on 28 July 2023 to proceed to finalise and publish a revised conclusion on the peer review of the pesticide risk assessment of the active substance S-metolachlor, including also the assessment of ED properties in relation to human health.

In the framework of the art. 12 Confirmatory data, a new freezer storage stability was assessed. No data on pineapples were submitted in relation to the data gap number 2 identified in the MRL review. EFSA identified a need for further information. Therefore, an EFSA request to provide additional information was sent to the applicant on 1 March 2023 in form of a clock stop letter. On 21 March 2023, the applicant informed EFSA that no additional data will be submitted in the framework of this application. Consequently, EFSA acknowledged this statement and proceeded with drafting of the Reasoned Opinion.

EFSA based its assessment on the renewal assessment report and the revised renewal assessment report submitted by the RMS (Germany, 2018, 2023), the reasoned opinion on the MRL review according to Article 12 of Regulation (EC) No 396/2005 (EFSA, 2012), peer review report to the conclusion regarding the peer review of the pesticide risk assessment of the active substance S-metolachlor and EFSA conclusion on the peer review of S-metolachlor excluding the assessment of the ED properties (EFSA, 2023a,b).

¹ Regulation (EC) No 396/2005 of the Parliament and of the Council of 23 February 2005 on maximum residue levels of pesticides in or on food and feed of plant and animal origin and amending Council Directive 91/414/EEC. OJ L 70, 16.3.2005, p. 1–16.

² Commission Regulation (EU) No 1317/2013 of 16 December 2013 amending Annexes II, III and V to Regulation (EC) No 396/2005 of the European Parliament and of the Council as regards maximum residue levels for 2,4-D, beflubutamid, cyclanilide, diniconazole, florasulam, metolachlor and S-metolachlor, and milbemectin in or on certain products. OJ L 339, 17.12.2013, p. 1–43.

For this application, the data requirements established in Regulation (EU) No 283/2013³ and the relevant guidance document at the date of implementation of the confirmatory data requirements by Regulation (EU) No 1317/2013 are applicable (OECD, 2007). The assessment is performed in accordance with the legal provisions of the Uniform Principles for the Evaluation and the Authorisation of Plant Protection Products adopted by Commission Regulation (EU) No 546/2011⁴.

An updated list of end points, including the end points of relevant studies assessed previously and the confirmatory data evaluated in this application, is presented in Appendix B.

The assessment report submitted by the RMS (Germany, 2018, 2023) is considered a supporting document to this reasoned opinion and, thus, is made publicly available as a background document to this reasoned opinion.⁵

1. Residues in plants

1.1. Nature of residues and methods of analysis in plants

1.1.1. Nature of residues in primary crops

Not relevant for the current assessment.

1.1.2. Nature of residues in rotational crops

Not relevant for the current assessment.

1.1.3. Nature of residues in processed commodities

Not relevant for the current assessment.

1.1.4. Analytical methods for enforcement purposes in plant commodities

Not relevant for the current assessment.

During the MRL review, it was concluded that metolachlor (sum of isomers, including S-metolachlor) could be enforced in food of plant origin (high water content, dry and acidic commodities) at a LOQ of 0.05 mg/kg (EFSA, 2012).

In the framework of the assessment of the renewal of the active substance, an updated conclusion was issued, stating that the components of the residue definition in food and feed of plant origin (metolachlor including other mixtures of constituent isomers including S-metolachlor (sum of isomers)) can be monitored by a quick, easy, cheap, effective and safe method (QuEChERS) using liquid chromatography with tandem mass spectrometry (LC-MS/MS) with a LOQ of 0.01 mg/kg in all commodity groups. The efficiency of the extraction procedures used was not verified but not required, since residues above LOQ in all matrix groups, as a result of the representative uses assessed for the renewal of the approval, were not found.

1.1.5. Stability of residues in plants

In the framework of the renewal assessment of the active substance, a storage stability study for S-metolachlor in commodities with high protein content (dried broad beans) and high acid content (whole oranges) was submitted with the dossier (Germany, 2018, 2023).

This study was submitted to address the data gap number 1 (storage stability data for commodities with a high acid content) identified during the MRL review (EFSA, 2012) and linked to the tentative MRLs on strawberries and pineapples.

The submitted study is valid and sufficient to demonstrate the freezer storage stability of S-metolachlor up to 24 months in whole oranges. The key results of this study are presented in Appendix B.1.1.2. Average percentages of residues (as compared to the nominal value) recovered at each storage interval

³ Commission Regulation (EU) No 283/2013 of 1 March 2013 setting out the data requirements for active substances, in accordance with Regulation (EC) No 1107/2009 of the European Parliament and of the Council concerning the placing of plant protection products on the market. OJ L 93, 3.4.2013, p. 1–84.

⁴ Commission Regulation (EU) No 546/2011 of 10 June 2011 implementing Regulation (EC) No 1107/2009 of the European Parliament and of the Council as regards uniform principles for evaluation and authorisation of plant protection products. OJ L 155, 11.6.2011, p. 127–175.

⁵ Background documents to this reasoned opinion are published on OpenEFSA portal and are available at the following link: <https://open.efsa.europa.eu/study-inventory/EFSA-Q-2018-00912>

(0, 1, 3, 6, 12, 18, 24 months) always remain above 70% in whole oranges. Based on these results, it is concluded that residues of S-metolachlor are stable under deep freezer conditions (-18°C) over a period of at least 24 months in commodities with high acid content.

Consequently, the data gap related to the lack of storage stability study for high acid content commodities is addressed.

Nevertheless, the maximum storage time interval of the samples of the residue trials performed on strawberries was not reported and EFSA is of the opinion that this information is essential to conclude on the acceptability of the residue trials performed on this crop. After EFSA requested to provide this information, the applicant informed EFSA that they did not intend to submit any additional data in support of the MRL review according to Article 12 of Regulation (EC) No 396/2005.

EFSA concluded that the data gap number 1 identified in the framework of the MRL review is fully addressed for high acid content commodities. For strawberries however, lacking information on the storage interval of residue trial samples, no conclusion can be drawn on the validity of residue trials, and therefore, the tentative MRL cannot be confirmed.

1.1.6. Proposed residue definitions

The previously derived residue definitions are still applicable.

1.2. Magnitude of residues in plants

The data gap number 2 (4 supervised residue trials supporting the outdoor GAP on pineapple) identified during the MRL review (EFSA, 2012) is linked to the tentative MRL on pineapples.

In the framework of the renewal assessment of the active substance, residue trials on pineapples supporting the import tolerance assessed in the MRL review were not submitted.

After EFSA requested to provide this information, the applicant informed EFSA that they did not intend to submit any additional data in support of the MRL review according to Article 12 of Regulation (EC) No 396/2005.

EFSA concluded that the data gap number 2 identified in the framework of the MRL review was not addressed.

2. Residues in livestock

The confirmatory data assessed in this evaluation do not have an impact on pesticide residues expected in livestock.

3. Consumer risk assessment

The submitted confirmatory data did not trigger a modification of previous risk assessment performed on S-metolachlor in the framework of the MRL review. Nevertheless, it should be noted that the assessment of the ED properties of S-metolachlor is currently ongoing, and this might affect the conclusion of the previous risk assessment performed on S-metolachlor.

4. Conclusion and recommendations

In the framework of the renewal assessment of the active substance, the freezer storage stability study for S-metolachlor in commodities with high acid content was submitted to address the data gap number 1 identified in the framework of the MRL review. In high acid content matrices, the freezer storage stability of S-metolachlor is demonstrated for 24 months. For strawberries however, in the absence of further information on the storage conditions of the samples of the residue trials, the data gap number 1 is deemed only partially addressed.

The data gap number 2 related to the absence of residue trials supporting an import tolerance on pineapples was not addressed.

As for the two commodities under assessment (strawberries and pineapples), the data gaps are not deemed fully addressed, the current MRLs at the LOQ of 0.05^* mg/kg are still deemed tentative. EFSA recommends maintaining these MRLs at the lowest achievable enforcement LOQ. Since a new lower LOQ for enforcement in high acid content commodities of 0.01 mg/kg has been validated during the assessment of the renewal of the approval of the active substance, it is proposed to change the existing MRL value from 0.05^* to 0.01^* mg/kg for these two commodities. The overview of the assessment of art. 12 confirmatory data and the recommended MRL modifications are summarised in Appendix B.4.

Furthermore, considering that a new lower LOQ for enforcement in plant commodities of 0.01* mg/kg has been validated during the assessment of the renewal of the active substance, risk managers may also consider lowering the existing MRLs, which are currently set at an LOQ of 0.05* mg/kg, to this value for those commodities for which there are currently no authorised uses of S-metolachlor as plant protection product.

It should be noted that the assessment of the ED properties of S-metolachlor is currently ongoing, and this might affect the conclusion of the previous risk assessment performed on S-metolachlor in the MRL review for which no modification was triggered by the present assessment.

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Abbreviations

a.s.	active substance
AR	applied radioactivity
BBCH	growth stages of mono- and dicotyledonous plants
CF	conversion factor for enforcement to risk assessment residue definition
DAT	days after treatment
FAO	Food and Agriculture Organization of the United Nations
GAP	Good Agricultural Practice
HR	highest residue
ILV	independent laboratory validation
ISO	International Organisation for Standardisation
IUPAC	International Union of Pure and Applied Chemistry
LC-MS/MS	liquid chromatography with tandem mass spectroscopy
LOQ	limit of quantification
MRL	maximum residue level
MS/MS	tandem mass spectrometry detector
NEU	northern Europe
OECD	Organisation for Economic Co-operation and Development
PAFF	Standing Committee on Plants, Animals, Food and Feed
PBI	plant back interval
PHI	preharvest interval
QuEChERS	Quick, Easy, Cheap, Effective, Rugged and Safe (analytical method)
RA	risk assessment

RD	residue definition
RMS	rapporteur Member State
SEU	southern Europe
TRR	total radioactive residue
WHO	World Health Organization

Appendix A – Summary of GAPs assessed in the evaluation of confirmatory data

Crop and/or situation	NEU, SEU, MS or country	F, G or I ^(a)	Pests or group of pests controlled	Preparation		Application				Application rate per treatment			PHI (days) ^(d)	Remarks	
				Type ^(b)	Conc. a.s.	Method kind	Range of growth stages and season ^(c)	Number min–max	Interval between application (min)	g a.s./hL min–max	Water L/ha min–max	Rate			Unit
MRL review GAPs (confirmatory data, authorised uses (EFSA, 2012))															
Strawberries	NEU	F	Annual weeds	EC	960 g/L	Foliar treatment	Until BBCH 55	2	11			0.67	Kg a.s./ha	30	The last treatment before the consumable part is formed corresponds to the PHI of 30 days approximately
Pineapples	Non-EU	F				Foliar treatment	n.a.	1	–			1.92	Kg a.s./ha	365	Import tolerance reported by FR.

NEU: northern European Union; SEU: southern European Union; MS: Member State.

(a): Outdoor or field use (F), greenhouse application (G) or indoor application (I).

(b): CropLife International Technical Monograph no 2, 6th Edition. Revised May 2008. Catalogue of pesticide formulation types and international coding system.

(c): Growth stage range from first to last treatment (BBCH Monograph, Growth Stages of Plants, 1997, Blackwell, ISBN 3–8263–3152-4), including, where relevant, information on season at time of application.

(d): PHI: minimum preharvest interval.

Appendix B – List of end points

B.1. Residues in plants

B.1.1. Nature of residues and analytical methods for enforcement purposes in plant commodities

B.1.1.1. Metabolism studies, analytical methods and residue definitions in plants

Primary crops (available studies)	Crop groups	Crop(s)	Application(s)	Sampling (DAT)	Comment/ Source
	Fruit crops	–	–	–	–
	Root crops	Potato	Soil (pre-emergence), F: 1 × 2.24 kg as/ha (MOC) Soil (pre-emergence), G: 1 × 3.36 kg as/ha (MOC) Foliar (pre-emergence), G: 1 × 2.8 kg as/ha (MOC)	Soil appl.: 25, 50, 100% Maturity Foliar appl.: 0, 7, 14, 21 and 74 (maturity) (Foliage, tubers)	Study performed with metolachlor (MOC) uniformly ¹⁴ C-labelled in the phenyl ring (EFSA, 2023a).
			Soil (pre-emergence): 1 × 2.26 kg as/ha + Foliar (post-emergence): 1.39 kg as/ha + partly soil (drenching 66 days after planting): 1.59 kg as/ha, G (MOC)	Foliage and tubers: 66, 99 and 161 (maturity)	Study performed with metolachlor (MOC) uniformly ¹⁴ C-labelled in the phenyl ring (EFSA, 2023a).
	Leafy crops	–	–	–	–
	Cereals/grass	Maize	Foliar (early post-emergence, F: 1 × 1.44 kg as/ha – BBCH 13 (SMOC or MOC)	Plant: 30, 82 Stalks/ Cobs/grains: 153	Study performed with S-metolachlor (S-MOC) and metolachlor (MOC) uniformly ¹⁴ C-labelled in the phenyl ring (EFSA, 2023a).
	Pulses/oilseeds	Soya bean	Soil (pre-emergence), F: 1 × 1.72 kg as/ha (SMOC) Soil (pre-emergence), F: 1 × 5.17 kg as/ha (SMOC) Stem injection, F: 0.6 mg as/plant in 10 µL dimethylsulfoxide (SMOC)	Soil appl.: 19, 57, 75 (whole plant/dried hay) and 156 (stalk, beans) Stem inj.: 1, 75 (whole plant) and 99 (stalk, beans)	Study performed with S-metolachlor (S-MOC) uniformly ¹⁴ C-labelled in the phenyl ring (EFSA, 2023a).
	Miscellaneous	–	–	–	–

Rotational crops (available studies)	Crop groups	Crop(s)	Application(s)	PBI (DAT)	Comment/Source
	Root/tuber crops	Radish	Bare soil application	30, 120, 364	Bare soil application of phenyl labelled ¹⁴ C S-metolachlor at 1.63 kg as/ha (EFSA, 2023a)
	Leafy crops	Lettuce	Bare soil application	30,120, 364	
	Cereal (small grain)	Spring wheat (forage, grain, fodder) Winter wheat (forage, grain, fodder)	Bare soil application	30,120, 364	
	Other	–	–	–	
Processed commodities (hydrolysis study)	Conditions		Stable?		Comment/Source
	Pasteurisation (20 min, 90°C, pH 4)		Not triggered		–
	Baking, brewing and boiling (60 min, 100°C, pH 5)		Not triggered		–
	Sterilisation (20 min, 120°C, pH 6)		Not triggered		–
	Other processing conditions		–		–

Can a general residue definition be proposed for primary crops?	Yes	Metabolic pathways in all studies were found to be similar. The parent compound undergoes a rapid and extensive metabolism into mainly polar aqueous metabolites and it is either metabolised by glutathione conjugation or by oxidative reactions. A supplementary study on lettuce was available (EFSA, 2023).
Rotational crop and primary crop metabolism similar?	Yes (provisional)	Unchanged parent was only detected in minor amounts in lettuce (0.001 mg/kg) at 30d PBI. Residues mainly consisted of a large range of small fractions, none of them exceeding 0.01 mg/kg in any of the edible crop parts, except metabolite CGA133275, free and its glucose and malonyl-glucose conjugated forms that were predominant in the feed items (wheat forage, wheat fodder at maturity (straw and husks) and in radish tops). The rest of the residue was associated with natural components, with glucose conjugates being the most predominant ones. It was not demonstrated that all persistent soil metabolites were adequately addressed in the studies (EFSA, 2023).
Residue pattern in processed commodities similar to residue pattern in raw commodities?	Not triggered.	–

Plant residue definition for monitoring (RD-Mo)	For all crop groups (EFSA, 2023): "Metolachlor including other mixtures of constituent isomers including S-metolachlor (sum of isomers)"
Plant residue definition for risk assessment (RD-RA)	Primary crops (all crop groups): "Metolachlor including other mixtures of constituent isomers including S-metolachlor (sum of isomers)" (EFSA, 2023) Rotational crops (all crop groups): "Metolachlor including other mixtures of constituent isomers including S-metolachlor (sum of isomers)" – Provisional (EFSA, 2023)^(a)
Methods of analysis for monitoring of residues (analytical technique, crop groups, LOQs)	QuEChERS multiresidue method (EN 15662:2008): LC-MS/MS, LOQ = 0.01 mg/kg for metolachlor in high water content, high acid content, dry and fatty matrix. Confirmatory method is available. ILV is available. Extraction efficiency not verified (not required, since residues above LOQ in all matrix groups, as a result of the representative uses, were not found) (EFSA, 2023)

DAT: days after treatment; PBI: plant-back interval; BBCH: growth stages of mono- and dicotyledonous plants; MRL: maximum residue level; LOQ: limit of quantification; LC-MS/MS: liquid chromatography with tandem mass spectrometry; QuEChERS: Quick, Easy, Cheap, Effective, Rugged, and Safe; ILV: independent laboratory validation.

(a): **Data gap:** Sufficient rotational crops field trials in NEU and SEU analysing for CGA133275, free and conjugated in food and feed edible parts of the rotational crops with a validated analytical method including a hydrolysis step to release the conjugates of CGA133275. In the absence of further evidence persistent soil metabolites are addressed by the rotational crops metabolism study, metabolites OXA [CGA51202], ESA [CGA354743], CGA40172, CGA 368208, NOA436611 and CGA 357704 will need also to be quantified in the rotational crops field trials. The genotoxicity potential of CGA133275, ESA [CGA354743], CGA 368208, NOA436611 may need to be addressed (EFSA, 2023).

B.1.1.2. Stability of residues in plants

Plant products (available studies)	Category	Commodity	T (°C)	Stability period		Compounds covered	Comment/ Source
				Value	Unit		
High water content		Maize forage	-18	24	Month	S-metolachlor	EFSA (2023)
		Maize whole plant	-18	13 ^(a)	Month	S-metolachlor	EFSA (2023)
		Lettuce	-18	23	Month	CGA133275	EFSA (2023)
High oil content		Soya bean	-18	24	Month	S-metolachlor	EFSA (2023)
		Sunflower seeds	-18	13 ^(a)	Month	S-metolachlor	EFSA (2023)
			-18	23	Month	CGA133275	EFSA (2023)
High protein content	Dry beans	-18	24	Month	S-metolachlor	EFSA (2023)	
		-18	23	Month	CGA133275	EFSA (2023)	
Dry/High starch	Potato	-18	24	Month	S-metolachlor	EFSA (2023)	
		Maize grain	-18	24	Month	S-metolachlor	EFSA (2023)
		Maize grain	-18	13 ^(a)	Month	S-metolachlor	EFSA (2023)
		Wheat grain	-18	23	Month	CGA133275	EFSA (2023)
High acid content	Strawberries	-18	23	Month	CGA133275	EFSA (2023)	
	Oranges	-18	24	Month	S-metolachlor	EFSA (2023)	
Processed products	-	-	-	-	-	-	
Others	-	-	-	-	-	-	

(a): Results at 13 months from an interim report (EFSA, 2023a).

B.1.2. Magnitude of residues in plants

B.1.2.1. Summary of residues data from the supervised residue trials

Commodity	Region/ Indoor ^(a)	Residue levels observed in the supervised residue trials (mg/kg)	Comments/Source	Calculated MRL (mg/kg)	HR ^(b) (mg/kg)	STMR ^(c) (mg/kg)	CF ^(d)
RD-Mo/RD-RA: 'Metolachlor including other mixtures of constituent isomers including S-metolachlor (sum of isomers)'							
Strawberries	NEU	3 × < 0.02	3 residue trials performed with S-metolachlor compliant with authorised GAP (EFSA, 2012). The information on the storage conditions of the samples is not available.	–	–	–	–
Pineapples	Import tolerance	–	No data available	–	–	–	–

MRL: maximum residue level; GAP: Good Agricultural Practice; Mo: monitoring; RA: risk assessment.

(a): NEU: Outdoor trials conducted in northern Europe.

(b): Highest residue. The highest residue for risk assessment refers to the whole commodity and not to the edible portion.

(c): Supervised trials median residue. The median residue for risk assessment refers to the whole commodity and not to the edible portion.

(d): Conversion factor to recalculate residues according to the residue definition for monitoring to the residue definition for risk assessment.

B.1.2.2. Residues in rotational crops

Residues in rotational and succeeding crops expected based on confined rotational crop study?	Yes	The uptake of radioactivity was most dominant at a PBI of 120d in wheat fodder and radish tops (0.78 and 0.23 mg/kg, respectively). S-metolachlor was only detected in lettuce (1% TRR; 0.001 mg/kg) at the 30d PBI. Residue levels of S-metolachlor above the LOQ (0.01 mg/kg) are therefore not expected in rotational crops. The residue mainly consisted of a large range of small fractions, none of them exceeding 0.01 mg/kg in edible crop parts, except for metabolite CGA133275, free and its glucose and malonyl-glucose conjugated forms that were predominant in wheat forage (up to 40% TRR), in wheat, fodder at maturity (straw and husks) (up to 32.7% TRR) and in radish tops (up to 19.3% TRR) at 120 and 365 day- PBIs (EFSA, 2023).
Residues in rotational and succeeding crops expected based on field rotational crop study?	Inconclusive	Data gap: Sufficient rotational crops field trials in NEU and SEU analysing for CGA133275, free and conjugated in food and feed edible parts of the rotational crops with a validated analytical method including a hydrolysis step to release the conjugates of CGA133275 (EFSA, 2023).

B.1.2.3. Processing factors

No processing studies were submitted in the framework of the present MRL application.

B.2. Residues in livestock

Not relevant.

B.3. Consumer risk assessment

An update of the consumer risk assessment performed in the framework of the MRL review is not required under the present assessment.

B.4. Recommended MRLs

Code ^(a)	Commodity	Existing MRL ^(b)	Data gap(s) Art.12 Review	Proposed MRL	Conclusion/recommendation
Enforcement residue definition: Metolachlor and S-metolachlor (metolachlor including other mixtures of constituent isomers including S-metolachlor (sum of isomers))					
0152000	Strawberries	0.05* (ft 1)	Footnote related to data gap No 1 (Storage stability data for commodities with a high acid content)	0.01*	A new storage stability study was submitted. This study is valid and demonstrates the stability of S-metolachlor for 24 months in high acid content commodities. However, the storage time interval of the samples of the residue trials performed on strawberries was not reported. Thus, no conclusion on the validity of these trials could be

Code ^(a)	Commodity	Existing MRL ^(b)	Data gap(s) Art.12 Review	Proposed MRL	Conclusion/recommendation
					drawn. Consequently, the data gap is deemed partially addressed. The existing MRL should be lowered to the enforcement LOQ (0.01 mg/kg).
0163080	Pineapples	0.05* (ft 2)	Footnote related to data gap No 1 (Storage stability data for commodities with a high acid content) and No 2 (4 supervised residue trials supporting the outdoor GAP on pineapple)	0.01*	The data gap on storage stability is addressed by a new valid study demonstrating the stability of S-metolachlor for 24 months in high acid content commodities. However, residue trials supporting the use on pineapples were not submitted, and therefore, this data gap is not addressed. The existing MRL should be lowered to the enforcement LOQ (0.01 mg/kg).

MRL: maximum residue level; NEU: northern Europe; SEU: southern Europe; GAP: Good Agricultural Practice.

*: Indicates that the MRL is set at the limit of analytical quantification (LOQ).

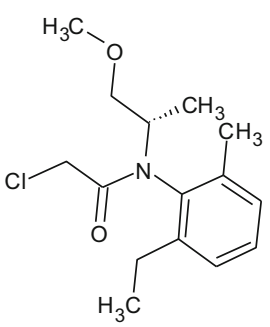
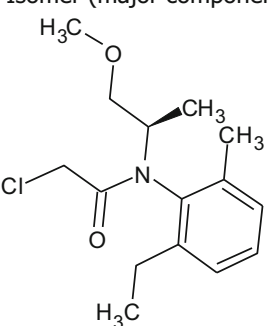
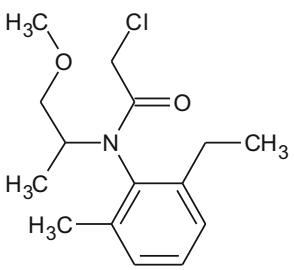
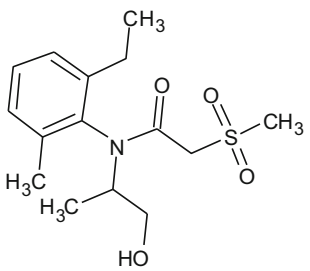
(a): Commodity code number according to Annex I of Regulation (EC) No 396/2005.

(b): Existing EU MRL and corresponding footnote on confirmatory data.

ft 3: The European Food Safety Authority identified some information on storage stability as unavailable. When re-viewing the MRL, the Commission will take into account the information referred to in the first sentence, if it is submitted by 17 December 2015, or, if that information is not submitted by that date, the lack of it.

ft 4: The European Food Safety Authority identified some information on residue trials and storage stability as unavailable. When re-viewing the MRL, the Commission will take into account the information referred to in the first sentence, if it is submitted by 17 December 2015, or, if that information is not submitted by that date, the lack of it.

Appendix C – Used compound codes

Code/trivial name ^(a)	IUPAC name/SMILES notation/InChiKey ^(b)	Structural formula ^(c)
S-metolachlor	reaction mixture of 80–100% 2-chloro-2'-ethyl- <i>N</i> -[(1 <i>S</i>)-2-methoxy-1-methylethyl]-6'-methylacetanilide and 20–0% 2-chloro-2'-ethyl- <i>N</i> -[(1 <i>R</i>)-2-methoxy-1-methylethyl]-6'-methylacetanilide <chem>ClCC(=O)N([C@@H](C)COC)c1c(C)cccc1CC</chem> (<i>S</i> -isomer) WVQBLGZPHOPPFO-LBPRGKRZSA-N (<i>S</i> -isomer)	
	<chem>ClCC(=O)N([C@H](C)COC)c1c(C)cccc1CC</chem> (<i>R</i> -isomer) WVQBLGZPHOPPFO-GFCCVEGCSA-N (<i>R</i> -isomer)	<i>S</i> -Isomer (major component)  <i>R</i> -isomer
metolachlor	2-chloro-2'-ethyl- <i>N</i> -[(1 <i>RS</i>)-2-methoxy-1-methylethyl]-6'-methylacetanilide <chem>ClCC(=O)N(C(C)COC)c1c(C)cccc1CC</chem> WVQBLGZPHOPPFO-UHFFFAOYSA-N	
CGA133275	<i>N</i> -(2-ethyl-6-methylphenyl)- <i>N</i> -(1-hydroxypropan-2-yl)-2-(methanesulfonyl)acetamide <chem>CS(=O)(=O)CC(=O)N(C(C)CO)c1c(C)cccc1CC</chem> JXGGXQRJANRQKP-UHFFFAOYSA-N	

IUPAC: International Union of Pure and Applied Chemistry; SMILES: simplified molecular-input line-entry system; InChiKey: International Chemical Identifier Key.

(a): The metabolite name in bold is the name used in the conclusion.

(b): ACD/Name 2021.1.3 ACD/Labs 2021.1.3 (File Version N15E41, Build 123232, 7 July 2021).

(c): ACD/ChemSketch 2021.1.3 ACD/Labs 2021.1.3 (File Version C25H41, Build 123835, 28 August 2021).