Modification of the existing maximum residue level for pyraclostrobin in sweet corn

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Abstract

In accordance with Article 6 of Regulation (EC) No 396/2005, the applicant H.L Hutchinson Ltd submitted a request to the competent national authority in the United Kingdom to modify the existing maximum residue level (MRL) for the active substance pyraclostrobin in sweet corn. The data submitted in support of the request were found to be sufficient to derive an MRL proposal for sweet corn. An analytical method for MRL enforcement and its independent laboratory validation, using liquid chromatography with tandem mass spectrometry (LC-MS/MS) was sufficiently validated at a limit of quantification (LOQ) of 0.02 mg/kg. Based on the risk assessment results, EFSA concluded that the short-term and long-term intake of residues resulting from the use of pyraclostrobin according to the reported agricultural practice is unlikely to present a risk to consumer health.

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Keywords: pyraclostrobin, sweet corn, pesticide, MRL, consumer risk assessment

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Summary

In accordance with Article 6 of Regulation (EC) No 396/2005, H. L Hutchinson Ltd submitted an application to the competent national authority in the United Kingdom (evaluating Member State, (EMS)) to modify the existing maximum residue level (MRL) for the active substance pyraclostrobin in sweet corn. The EMS drafted an evaluation report in accordance with Article 8 of Regulation (EC) No 396/2005, which was submitted to the European Commission and forwarded to the European Food Safety Authority (EFSA) on 24 May 2019. To accommodate for the intended uses of pyraclostrobin, the EMS proposed to raise the existing MRL from the limit of quantification (LOQ) 0.02* to 0.08 mg/kg.

EFSA assessed the application and the evaluation report as required by Article 10 of the MRL regulation. EFSA identified data gaps or points which needed further clarification, which were requested from the EMS. On 23 August 2019, the EMS submitted the requested information in a revised evaluation report (United Kingdom, 2019), which replaced the previously submitted evaluation report.

Based on the conclusions derived by EFSA in the framework of Directive 91/414/EEC or Regulation (EC) No 1107/2009, the data evaluated under previous MRL assessment and the additional data provided by the EMS in the framework of this application, the following conclusions are derived.

The metabolism of pyraclostrobin following foliar application was investigated in crops belonging to the group of root vegetables (potatoes), fruits (grapes) and cereals (wheat, paddy rice).

Studies investigating the effect of processing on the nature of pyraclostrobin (hydrolysis studies) demonstrated that the active substance is stable.

The applicant provided five residue trials on maize. Results for the cobs without husks (immature maize) are available for the preharvest interval (PHI) defined in the Good Agricultural Practice (GAP) (29 days ± 25%). One of the trials was not considered for calculating the MRL, because the immature maize sample was taken just 1 week before the harvest of the mature grain. Thus, it is expected that the sample was not representative for immature maize. Overall, sufficient trials are available to derive an MRL proposal of 0.04 mg/kg for sweet corn by extrapolation from immature maize.

Specific studies investigating the magnitude of pyraclostrobin residues in processed commodities are not required, because of the low contribution of sweet corn to the chronic exposure.

The occurrence of pyraclostrobin residues in rotational crops was investigated in the framework of the EU pesticides peer review. Based on the available information on the nature and magnitude of residues, it was concluded that significant residue levels are unlikely to occur in rotational crops, provided that the active substance is used according to the proposed GAP.

Residues of pyraclostrobin in commodities of animal origin were not assessed since the crop under consideration in this MRL application is normally not fed to livestock.

The toxicological profile of pyraclostrobin was assessed in the framework of the EU pesticides peer review under Directive 91/414/EEC and the data were sufficient to derive an acceptable daily intake (ADI) of 0.03 mg/kg body weight (bw) per day and an acute reference dose (ARfD) of 0.03 mg/kg bw.

The consumer risk assessment was performed with revision 3 of the EFSA Pesticide Residues Intake Model (PRIMO). The short-term exposure did not exceed the ARfD for the crop assessed in this application. EFSA concluded that the long-term intake of residues of pyraclostrobin resulting from the existing and the intended uses is unlikely to present a risk to consumer health.

EFSA concluded that the proposed use of pyraclostrobin on sweet corn will not result in a consumer exposure exceeding the toxicological reference values and therefore is unlikely to pose a risk to consumers’ health.

The renewal process of the approval for pyraclostrobin in accordance with Regulation (EC) No 1107/2009 is not yet finalised, and therefore, the conclusions reported in this reasoned opinion might need to be reconsidered in the light of the outcome of the peer review.

EFSA proposes to amend the existing MRL as reported in the summary table below.

Full details of all endpoints and the consumer risk assessment can be found in Appendices B–D.

| Code(a) | Commodity    | Existing EU MRL (mg/kg) | Proposed EU MRL (mg/kg) | Comment/justification                              |
|---------|--------------|-------------------------|-------------------------|---------------------------------------------------|
| 0234000 | Sweet corn   | 0.02*                   | 0.04                    | The MRL proposal is sufficiently supported by data. Risk for consumers unlikely |

*: 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.

(F): Fat soluble.

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Assessment

In accordance with Article 6 of Regulation (EC) No 396/2005, H.L. Hutchinson Ltd submitted an application to the competent national authority in the United Kingdom (evaluating Member State, EMS) to modify the existing maximum residue level (MRL) for the active substance pyraclostrobin in sweet corn. The detailed description of the intended use of pyraclostrobin in sweet corn, which is the basis for the current MRL application, is reported in Appendix A. The EMS drafted an evaluation report in accordance with Article 8 of Regulation (EC) No 396/2005, which was submitted to the European Commission and forwarded to the European Food Safety Authority (EFSA) on 24 May 2019. To accommodate for the intended use of pyraclostrobin, the EMS proposed to raise the existing MRL from the limit of quantification (LOQ) 0.02 to 0.08 mg/kg.

Pyraclostrobin is the ISO common name for methyl 2-[1-(4-chlorophenyl)pyrazol-3-yloxymethyl]-N-methoxycarbaminate (IUPAC). The chemical structures of the active substance and its main metabolites are reported in Appendix E.

Pyraclostrobin was evaluated in the framework of Directive 91/414/EEC with Germany designated as rapporteur Member State (RMS) for the representative use as a foliar application on grapes. The draft assessment report (DAR) prepared by the RMS was not peer reviewed by EFSA. Therefore, no EFSA conclusion is available. Pyraclostrobin was approved for the use as fungicide on 1 June 2004. In 2009, the approval for pyraclostrobin was extended to be used as a plant growth regulator. The process of renewal of the first approval is currently ongoing.

The European Union (EU) MRLs for pyraclostrobin are established in Annexes II of Regulation (EC) No 396/2005. The review of existing MRLs according to Article 12 of Regulation (EC) No 396/2005 (MRL review) has been performed (EFSA, 2011b) and the proposed modifications have been implemented in the MRL legislation. After completion of the MRL review, EFSA has issued several reasoned opinions on the modification of MRLs for pyraclostrobin. The proposals from these reasoned opinions have been considered in recent regulations for EU MRL legislation.

EFSA based its assessment on the evaluation report submitted by the EMS (United Kingdom, 2019), the DAR (and its addendum) (Germany, 2001, 2003) prepared under Council Directive 91/414/EEC, the Commission review report on pyraclostrobin (European Commission, 2004), as well as the conclusions from previous EFSA opinions on pyraclostrobin (EFSA, 2011a, 2012, 2013, 2014a,b, 2016, 2017, 2018a,b,c), including the review of the existing MRLs for pyraclostrobin under Article 12 of Regulation (EC) No 396/2005 (EFSA, 2011b) and the assessment of confirmatory data following the MRL review for pyraclostrobin (EFSA, 2018b).

For this application, the data requirements established in Regulation (EU) No 544/2011 and the guidance documents applicable at the date of submission of the application to the EMS are applicable. 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 546/2011.

As the EU pesticides peer review of the active substance in accordance with Regulation (EC) No 1107/2009 is not yet finalised, the conclusions reported in this reasoned opinion may need to be reconsidered in the light of the outcome of the peer review.

A selected list of end points of the studies assessed by EFSA in the framework of this MRL application including the end points of relevant studies assessed previously, are presented in Appendix B.

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1 Council Directive 91/414/EEC of 15 July 1991 concerning the placing of plant protection products on the market. OJ L 230, 19.8.1991, p. 1-32.
2 Commission Directive 2004/30/EC of 10 March 2004 amending Council Directive 91/414/EEC to include benzoic acid, flazasulfuron and pyraclostrobin as active substances. OJ L 77, 13.3.2004, p. 50-53.
3 Commission Directive 2009/25/EC of 2 April 2009 amending Council Directive 91/414/EEC as regards an extension of the use of the active substance pyraclostrobin. OJ L 91, 3.4.2009, p. 20-22.
4 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.
5 For an overview of all MRL Regulations on this active substance, please consult: http://ec.europa.eu/food/plant/pesticides/eu-pesticides-database/public/?event=pesticide.residue.selection&language=EN
6 Commission Regulation (EU) No 544/2011 of 10 June 2011 implementing Regulation (EC) No 1107/2009 of the European Parliament and of the Council as regards the data requirements for active substances. OJ L 155, 11.6.2011, p. 1-66.
7 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.
The evaluation report submitted by the EMS (United Kingdom, 2019) and the exposure calculations using the EFSA Pesticide Residues Intake Model (PRiMo) are considered as supporting documents to this reasoned opinion and, thus, are made publicly available as background documents to this reasoned opinion.

1. Residues in plants

1.1. Nature of residues and methods of analysis in plants

1.1.1. Nature of residues in primary crops

The metabolism of pyraclostrobin in primary crops belonging to the group of fruit crops, root crops and cereals has been investigated in the framework of Directive 91/414/EEC and the EU MRL review (Germany, 2001; EFSA, 2011b, 2018c).

The metabolic pathway was found to be similar in all crop groups investigated. The predominant compound of the total residues in the crops investigated was the parent pyraclostrobin; the desmethoxy metabolite (500M07) was found in small amounts compared to the parent pyraclostrobin (Germany, 2001; EFSA, 2011b).

For the intended use in sweet corn, plant metabolism is considered to be sufficiently addressed.

1.1.2. Nature of residues in rotational crops

Sweet corn can be grown in rotation with other crops. According to the soil degradation studies evaluated in the framework of the peer review (European Commission, 2004), pyraclostrobin and the metabolites 500M06 and 500M07 are highly persistent in soil (DT\textsubscript{90} field pyraclostrobin: 83–230 days, DT\textsubscript{90lab} 500M06: 428–552 days, DT\textsubscript{90lab} 500M07: 372–529 days).

Metabolism studies in rotational crops were assessed in the framework of the peer review and the MRL review (Germany, 2001; EFSA, 2011b). No accumulation of pyraclostrobin or its metabolites (including 500M07) in the edible parts of the rotational crops were found. The metabolism of pyraclostrobin in rotational crops was considered to be similar to the metabolic pathway depicted in primary crops (EFSA, 2011b).

1.1.3. Nature of residues in processed commodities

Standard hydrolysis studies simulating processing conditions representative of pasteurisation, boiling and sterilisation were assessed in the peer review and the MRL review (Germany, 2001; EFSA, 2011b). Pyraclostrobin is hydrolytically stable under the representative conditions.

In the framework of the previous MRL application, a study investigating the nature of pyraclostrobin residues under more drastic processing conditions which simulates raffination of olive oil at high temperatures (190°C and 240°C, 30 min) was provided. In the study, a mixture of olive oil and aqueous sodium chloride solution (ratio 2:1) was heated up to 190°C and 240°C. At 190°C, a significant degradation of pyraclostrobin into 500M07 (41%) was observed. At this temperature, the parent compound (23%) and the metabolite 500M04 (19%) were also detected. At 240°C, the amount of parent accounted for only 5% applied radioactivity (AR) and the metabolites 500M04 (76%) and 500M07 (16%) were the major compounds detected (France, 2018; EFSA, 2018a,b,c). As regards the intended use of sweet corn, these drastic processing conditions are not relevant.

Considering that the process of the peer review is ongoing; once a final decision on the toxicological relevance of the degradation products is taken, the setting of a separate residue definition for processed products might be considered.

1.1.4. Methods of analysis in plants

An analytical method and its independent laboratory validation (ILV), using liquid chromatography with tandem mass spectrometry (LC-MS/MS) were sufficiently validated at a LOQ of 0.02 mg/kg for the determination of pyraclostrobin in high oil content, high water content, high acid content and dry/high starch content commodities (EFSA, 2011b).

The multiresidue QuEChERS method in combination with high-performance liquid chromatography with tandem mass spectrometry (HPLC-MS/MS) was described by the European Committee for Standardization (CEN) (CEN, 2008) and is reported for the analysis of pyraclostrobin in high water, acidic and dry commodities with an LOQ of 0.01 mg/kg.
The Article 12 MRL review concluded that pyraclostrobin can be enforced in food of plant origin with an LOQ of at least 0.02 mg/kg in high oil content, high water content, acidic and dry commodities. Sweet corn is considered a commodity with high-water content for which adequate analytical methods for monitoring of residues are available. The validation data demonstrated that an LOQ of 0.02 mg/kg can be achieved (EFSA, 2011b, 2018b).

1.1.5. Stability of residues in plants

Storage stability of pyraclostrobin and compound 500M07 under frozen conditions (below −10°C) was demonstrated for at least 18 months in high water, high acid, high oil, dry/high starch content and other commodities (Germany, 2001).

1.1.6. Proposed residue definitions

Based on the metabolism studies submitted in primary crops, rotational crops and the studies addressing the nature of residues in processed commodities, the residue definition for risk assessment and for enforcement in primary crops, rotational crops and processed commodities was set as parent ‘pyraclostrobin’ (EFSA, 2011b), which is an appropriate residue definition for sweet corn.

The residue definitions may need to be reconsidered, once the renewal process for the approval of pyraclostrobin is completed.

1.2. Magnitude of residues in plants

1.2.1. Magnitude of residues in primary crops

In support of the MRL application, the applicant submitted five northern Europe (NEU) residue trials performed in maize. As the residue trials were designed as decline studies, results were reported for the mature grain, maize cobs with and without husks and straw. According to the EU guidance document (European Commission, 1997b), residue trials on immature maize can be used to derive an MRL proposal for sweet corn by extrapolation. The samples were analysed for the parent compound and metabolite 500M07. According to the assessment of the EMS, the analytical methods used to analyse the residue trials samples were sufficiently validated and fit for purpose (France, 2018; EFSA, 2018a,b,c). The samples of these residue trials were stored under conditions for which integrity of the samples has been demonstrated.

In the residue trials, pyraclostrobin was applied to the crop at growth stage BBCH 65 which is in line with the Good Agricultural Practice (GAP). In four of the trials, the mature grain was harvested 71–85 days after the treatment; in the fifth trial, the preharvest interval (PHI) was significantly shorter (i.e. 34 days). Results for the cobs without husks are available for the PHI defined in the GAP (29 days ± 25%). EFSA noted that in the trial where the mature grain was harvested 34 days after the treatment with pyraclostrobin, the samples of the cobs without husks were taken just 8 days earlier. EFSA decided to exclude this trial, because it is questionable that the result refers to immature grains.8

Overall, sufficient trials are available to derive an MRL proposal of 0.04 mg/kg for sweet corn. The different MRL proposal compared to the EMS proposal is resulting from fact that EFSA selected different trials as valid.

1.2.2. Magnitude of residues in rotational crops

Residues in rotational crops have already been considered in the framework of previous assessments, including the recent Article 10 Reasoned opinion (EFSA, 2018d).

Since the maximum annual application rates for the crops under consideration in this application are lower than the application rate tested in the rotational crop study (see Section 1.1.2), and the fact that in the confined rotational crop study, pyraclostrobin was applied directly to bare soil whilst interception by crop foliage is expected in practice, it is concluded that the previously derived conclusion is still valid, provided that the active substance is applied according to the proposed GAP.

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8 In contrast to the EMS, EFSA accepted one residue trial where the immature grain samples were taken 36 days after the treatment instead of 29 days as defined in the GAP, because the deviation of the PHI was within the acceptable range of 25%, compared to the PHI defined in the GAP.
1.2.3. Magnitude of residues in processed commodities

In the framework of this application, the residue level of pyraclostrobin in all residue trials were found to be below 0.1 mg/kg and theoretical maximum daily intake (TMDI) for sweet corn is below 10% of acceptable daily intake (ADI).

1.2.4. Proposed MRLs

Based on the valid residue trials on maize (cobs without husks, immature maize), an MRL proposal of 0.04 mg/kg was derived for sweet corn.

2. Residues in livestock

Sweet corn is not expected to be fed to livestock; hence, the nature and magnitude of pyraclostrobin residues in livestock are not assessed in the framework of this application.

3. Consumer risk assessment

EFSA performed a dietary risk assessment using revision 3 of the EFSA PRIMo. The toxicological reference values for pyraclostrobin used in the risk assessment (i.e. ADI and acute reference dose (ARfD) values) were derived in the framework of the EU pesticide peer review (European Commission, 2004).

Short-term (acute) dietary risk assessment:

The short-term exposure assessment for sweet corn was performed in accordance with the internationally agreed methodology. The calculation was based on the highest residue level expected in the raw agricultural commodity. The short-term exposure did not exceed the ARfD (exposure accounted for 3% of the ARfD for UK toddlers).

Long-term (chronic) dietary risk assessment:

The most recent chronic risk assessment performed by EFSA was updated (EFSA, 2018d) by including the supervised trials median residue (STMR) value derived for sweet corn. The complete list of input values used in the exposure calculations is presented Appendix D.1.

The estimated long-term dietary intake was in the range of 32% of the ADI. Sweet corn was a minor contributor to the overall long-term exposure (max. 0.01% of the ADI). EFSA concluded that the long-term intake of residues of pyraclostrobin resulting from the existing and the intended uses is unlikely to present a risk to consumer health.

For further details on the exposure calculations, a screenshot of the Report sheet of the PRIMo is presented in Appendix C.

4. Conclusion and Recommendations

The data submitted in support of this MRL application were found to be sufficient to derive an MRL proposal for sweet corn.

EFSA concluded that the proposed use of pyraclostrobin on sweet corn will not result in a consumer exposure exceeding the toxicological reference values and therefore is unlikely to pose a risk to consumers’ health.

The MRL recommendations are summarised in Appendix B.4.

References

CEN (European Committee for Standardization), 2008. Foods of plant origin – Determination of pesticide residues using GC-MS and/or LC-MS/MS following acetonitrile extraction/partitioning and clean-up by dispersive SPE. QuEChERS-method. EN 15662, November 2008.

EFSA (European Food Safety Authority), 2011a. Reasoned opinion on the modification of the existing MRLs for pyraclostrobin in various crops. EFSA Journal 2011;9(3):2120. https://doi.org/10.2903/j.efsa.2011.2120

EFSA (European Food Safety Authority), 2011b. Review of the existing maximum residue levels (MRLs) for pyraclostrobin according to MRL review of Regulation (EC) No 396/2005. EFSA Journal 2011;9(8):2344, 92 pp. https://doi.org/10.2903/j.efsa.2011.2344

EFSA (European Food Safety Authority), 2012. Reasoned opinion on the modification of the existing MRLs for pyraclostrobin in leafy brassica and various cereals. EFSA Journal 2012;10(3):2606, 36 pp. https://doi.org/10.2903/j.efsa.2012.2606
France, 2018. Evaluation report on the modification of MRLs for pyraclostrobin in soyabean. May 2018, 69 pp.
Germany, 2001. Draft assessment report on the active substance pyraclostrobin prepared by the rapporteur Member State Germany in the framework of Council Directive 91/414/EEC, August 2001.
Germany, 2003. Addendum to the draft assessment report on the active substance pyraclostrobin prepared by the rapporteur Member State Germany in the framework of Council Directive 91/414/EEC, October 2003.
OECD (Organisation for Economic Co-operation and Development), 2011. OECD MRL calculator: spreadsheet for single data set and spreadsheet for multiple data set, 2 March 2011. In: Pesticide Publications/Publications on Pesticide Residues. Available online: http://www.oecd.org
OECD (Organisation for Economic Co-operation and Development), 2013. Guidance document on residues in livestock. In: Series on Pesticides No 73. ENV/JM/MONO(2013)8, 04 September 2013.
United Kingdom, 2019. Evaluation report on the modification of MRLs for pyraclostrobin in sweet corn. March 2019, revised in August 2019, 26 pp.

Abbreviations

a.s. active substance
ADI acceptable daily intake
AR applied radioactivity
ARfD acute reference dose
BBCH growth stages of mono- and dicotyledonous plants
bw body weight
CEN European Committee for Standardisation (Comité Européen de Normalisation)
CF conversion factor for enforcement to risk assessment residue definition
DAR draft assessment report
DAT days after treatment
DT₉₀ period required for 90% dissipation (define method of estimation)
EMS evaluating Member State
eq residue expressed as a.s. equivalent
FAO Food and Agriculture Organization of the United Nations
GAP Good Agricultural Practice
HPLC-MS/MS high-performance liquid chromatography with tandem mass spectrometry
HPLC-UVD high-performance liquid chromatography with ultra-violet detector
HR highest residue
IEIDI international estimated daily intake
IESTI international estimated short-term intake
ILV independent laboratory validation
ISO International Organisation for Standardisation
IUPAC International Union of Pure and Applied Chemistry
LC liquid chromatography
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
PeF peeling factor
PBI plant back interval
PHI preharvest interval
PRIMo (EFSA) Pesticide Residues Intake Model
PROFile (EFSA) Pesticide Residues Overview File
QuEChERS Quick, Easy, Cheap, Effective, Rugged, and Safe (analytical method)
RA risk assessment
RAC raw agricultural commodity
RD residue definition
RMS rapporteur Member State
SANCO Directorate-General for Health and Consumers
SEU southern Europe
STMR supervised trials median residue
TMDI theoretical maximum daily intake
UV ultraviolet (detector)
## Appendix A – Summary of intended GAP triggering the amendment of existing EU MRLs

| 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 |
|-----------------------|-------------------------|------------|-----------------------------------|-------------|------------|-----------------------------|---------------|---------|
| Sweet corn            | NEU                     | F          | Eyespot and Northern Leaf Blight  | EC 200g/L   | spraying   | 65 1 –                       | 200-400       | 0.2 Kg a.s./ha 29 |

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 methods of analysis in plants

#### B.1.1.1. Metabolism studies, methods of analysis and residue definitions in plants

| Primary crops (available studies) | Crop groups       | Crop(s)              | Application (s)                                      | Sampling (DAT) | Comment/source                                                                 |
|----------------------------------|-------------------|----------------------|------------------------------------------------------|----------------|-------------------------------------------------------------------------------|
| Fruit                            | Grapes            | Foliar: 6 × 130 to 480 g a.s./ha, from BBCH 53-55 to 81 | 40 DAT₆       | Radiolabelled active substance: [tolyl-U-¹⁴C]-pyraclostrobin and [chlorophenyl-U-¹⁴C]-pyraclostrobin (EFSA, 2011b) |
| Root                             | Potatoes          | Foliar: 6 × 300 g a.s./ha, from BBCH 31 to maturity | 7 DAT₃ and 7 DAT₆ (maturity) |                                                          |
| Cereals/grass                    | Wheat             | Foliar: 2 × 300 g a.s./ha, from BBCH 32 to 61 | 0 DAT₁, 31 DAT₁, 41 DAT₂, 63/65 DAT (forage) 74/6 DAT (hay) 103/104 DAT (grain, straw) |                                                          |
| Paddy rice                       |                   | Foliar: 3 × 130 g a.s./ha, from BBCH 39 to 69 | -1 DAT₂ (forage), 57 DAT₃ (straw, grain) | EFSA, (2018c) |

| Rotational crops (available studies) | Crop groups       | Crop(s) | Application (s) | PBI (DAT) | Comment/source                                                                 |
|--------------------------------------|-------------------|---------|----------------|-----------|-------------------------------------------------------------------------------|
| Root/tuber crops                     | Radishes          | 900 g a.s./ha |            | 30, 120, 365 | Radiolabelled active substance: [tolyl-U-¹⁴C]-pyraclostrobin and [chlorophenyl-U-¹⁴C]-pyraclostrobin (EFSA, 2011b) |
| Leafy crops                          | Lettuces          | 30, 120, 365 |            |           |
| Cereal (small grain)                 | Wheat             | 30, 120, 365 |            |           |

| Processed commodities (hydrolysis study) | Conditions                              | Stable? | Comment/Source |
|------------------------------------------|------------------------------------------|---------|----------------|
|                                          | Pasteurisation (20 min, 90°C, pH 4)      | Yes     | (EFSA, 2011b)  |
|                                          | Baking, brewing and boiling (60 min, 100°C, pH 5) | Yes     | (EFSA, 2011b)  |
|                                          | Sterilisation (20 min, 120°C, pH 6)      | Yes     | (EFSA, 2011b)  |

BBCH: growth stages of mono- and dicotyledonous plants; DATx: days after treatment x (e.g. DAT2: day after 2nd treatment).
Can a general residue definition be proposed for primary crops?

- Yes [EFSA (2011b)]

Rotational crop and primary crop metabolism similar?

- Yes [EFSA (2011b)]

Residue pattern in processed commodities similar to residue pattern in raw commodities?

- Yes

Plant residue definition for monitoring (RD-Mo)

- Pyraclostrobin

Plant residue definition for risk assessment (RD-RA)

- Pyraclostrobin

Methods of analysis for monitoring of residues (analytical technique, crop groups, LOQs)

- Matrices with high water content, high oil content, high acid content and dry/high starch content matrices and hops: LC–MS/MS, LOQ 0.02 mg/kg. Higher sensible method for high water content, acidic and dry/high starch content commodities with a LOQ of 0.01 mg/kg is also available (CEN, 2008).
- Confirmatory method available using HPLC-UV
- ILV available (EFSA, 2011b)

B.1.1.2. Stability of residues in plants

| Plant products (available studies) | Category            | Commodity          | T (°C) | Stability period Value | Compounds covered | Comment/source |
|-----------------------------------|---------------------|--------------------|--------|-----------------------|-------------------|---------------|
| High water content                | Tomatoes            | < −10              | 18     | Months                | Pyraclostrobin/500M07 | Germany (2001) |
| High water content                | Sugar beet tops     | < −10              | 18     | Months                | Pyraclostrobin/500M07 | Germany (2001) |
| High oil content                  | Peanut nutmeat      | < −10              | 18     | Months                | Pyraclostrobin/500M07 | Germany (2001) |
| Dry/high starch                   | Wheat grain         | < −10              | 18     | Months                | Pyraclostrobin/500M07 | Germany (2001) |
| High acid content                 | Grape juice         | < −10              | 18     | Months                | Pyraclostrobin/500M07 | Germany (2001) |
| Others                            | Wheat straw         | < −10              | 18     | Months                | Pyraclostrobin/500M07 | Germany (2001) |

DAT: days after treatment; a.s.: active substance; PBI: plant-back interval; LC–MS/MS: liquid chromatography with tandem mass spectrometry; LOQ: limit of quantification; ILV: independent laboratory validation.
B.1.2. Magnitude of residues in plants

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

| Commodity   | Region/indoor<sup>(a)</sup> | Residue levels observed in the supervised residue trials (mg/kg) | Comments/source                                                                 | Calculated MRL (mg/kg) | HR<sup>(b)</sup> (mg/kg) | STMR<sup>(c)</sup> (mg/kg) | CF<sup>(d)</sup> |
|-------------|-----------------------------|----------------------------------------------------------------|--------------------------------------------------------------------------------|------------------------|--------------------------|---------------------------|----------------|
| Sweet corn  | NEU                         | <0.01; 0.013; 0.018; 0.021 | Residue trials in maize; results from immature grain (cobs without husks) were used to derive MRL proposal. Extrapolation from immature maize to sweet corn is acceptable | 0.04                   | 0.021                    | 0.016                      | –               |

*: Indicates that the MRL is proposed at the limit of quantification. In bold the MRL proposal.

<sup>(a)</sup>: NEU: Outdoor trials conducted in northern Europe, SEU: Outdoor trials conducted in southern Europe, Indoor: Indoor EU trials or Country code: if non-EU trials.

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

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

<sup>(d)</sup>: 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?

|            | No | Germany (2001) |
|------------|----|----------------|
| Residues   |    |                |
| in rotational and succeeding crops expected based on **field** rotational crop study? | No | Germany (2001) |

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

**ARfD**

Highest IESTI, according to EFSA PRIMO

|                      |                |
|----------------------|----------------|
| Assumptions made for the calculations | The calculations were performed using EFSA PRIMO revision 3. EFSA focussed on the crop under assessment, using the highest residue level for sweet corn derived from the current assessment. It was noted that for some of the previously assessed commodities, due to higher consumption data in PRIMO revision 3 compared to the previously used version, the exposure exceeded the ARfD. |

|                      |                |
|----------------------|----------------|
| ARfD                 | 0.03 mg/kg bw (European Commission, 2004) |
| Highest IESTI, according to EFSA PRIMO | Sweet corn: 3.0% of the ARfD (UK toddler) |

**ADI**

Highest IEDI, according to EFSA PRIMO

|                      |                |
|----------------------|----------------|
| Assumptions made for the calculations | The calculations were performed using EFSA PRIMO revision 3. The calculation is based on the median residue levels derived for sweet corn. For other commodities assessed previously, the available median residue levels were considered. The contributions of commodities where no GAPs were reported in the framework of previous MRL assessments were not included in the calculation. |

|                      |                |
|----------------------|----------------|
| ADI                  | 0.03 mg/kg bw per day (European Commission, 2004) |
| Highest IEDI, according to EFSA PRIMO | 32% of the ADI (NL toddler) |
| Contribution of sweet corn | max. 0.01% of the ADI |

**ARfD**: acute reference dose; **bw**: body weight; **IESTI**: international estimated short-term intake; **PRIMO**: (EFSA) Pesticide Residues Intake Model; **ADI**: acceptable daily intake; **IEDI**: international estimated daily intake; **MRL**: maximum residue level; **GAP**: Good Agricultural Practice.

B.4. Recommended MRLs

| Code(a) | Commodity | Existing EU MRL (mg/kg) | Proposed EU MRL (mg/kg) | Comment/justification |
|---------|-----------|-------------------------|-------------------------|-----------------------|
| 0234000 | Sweet corn | 0.02*                   | 0.04                    | The MRL proposal is sufficiently supported by data. Risk for consumers unlikely |

*: 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.
(F): Fat soluble.
### Appendix C – Pesticide Residue Intake Model (PRIMO)

#### Pyraclostrobin (F)

**Toxicological reference values**

- **LOQs (mg/kg):** range from 0.01 to 15.0
- **ADI (mg/kg bw/day):** 0.03
- **ARfD (mg/kg bw):** 0.03

**Source of ADI:** EFSA PRIMO revision 3.0; 2017/12/11

**Year of evaluation:**

| Commodity/group of commodities | MRLs set at the LOQ (in % of ADI) | Commodities not under assessment (in % of ADI) |
|---------------------------------|-----------------------------------|-----------------------------------------------|
| Pears                           | 0.1%                              |                                                |
| Table grapes                    | 0.3%                              |                                                |
| Table grapes                    | 0.2%                              |                                                |
| Carrots                         | 0.3%                              |                                                |
| Oranges                         | 0.2%                              |                                                |
| Apples                          | 0.3%                              |                                                |
| Barley                          | 0.2%                              |                                                |
| Barley                          | 0.2%                              |                                                |
| Apples                          | 0.1%                              |                                                |
| Apples                          | 0.1%                              |                                                |
| Oranges                         | 0.2%                              |                                                |

**Chronic risk assessment:** JMPR methodology (IEDI/TMDI)

**Exposure resulting from the LUCI:**

| Commodity/group of commodities | LT adult | FI 6 yr | FI adult | WINE grapes | Raspberries (red and yellow) | Milk: Cattle | Oat | Wine grapes | Apples | Wine grapes | Milk: Cattle | Apples | Milk: Cattle | Wine grapes | Oat | Wine grapes | Apples | Wine grapes | Milk: Cattle |
|--------------------------------|----------|---------|---------|------------|---------------------------|--------------|-----|------------|--------|------------|--------------|--------|--------------|------------|-----|------------|--------|------------|--------------|
|                                |          |         |         |            |                           |              |     |            |        |            |              |        |              |            |     |            |        |            |              |
|                                |          |         |         |            |                           |              |     |            |        |            |              |        |              |            |     |            |        |            |              |
|                                |          |         |         |            |                           |              |     |            |        |            |              |        |              |            |     |            |        |            |              |
|                                |          |         |         |            |                           |              |     |            |        |            |              |        |              |            |     |            |        |            |              |
|                                |          |         |         |            |                           |              |     |            |        |            |              |        |              |            |     |            |        |            |              |

**Refined calculation mode**

**Exposures exceeding the ADI:**

| Commodity/group of commodities | Highest contributor to MS diet (in % of ADI) | 2nd contributor to MS diet (in % of ADI) | 3rd contributor to MS diet (in % of ADI) |
|--------------------------------|---------------------------------------------|----------------------------------------|----------------------------------------|
| Pears                         | 4% Apples                                   | 1% Milk: Cattle                        | 1% Milk: Cattle                        |
| Table grapes                  | 2% Milk: Cattle                             | 1% Apples                              | 1% Apples                              |
| Table grapes                  | 2% Milk: Cattle                             | 1% Apples                              | 1% Apples                              |
| Carrots                       | 1% Milk: Cattle                             | 0.5% Oranges                           | 0.3% Oranges                           |
| Oranges                       | 0.5% Oranges                                | 0.3% Oranges                           | 0.2% Oranges                           |
| Apples                        | 0.3% Oranges                                | 0.2% Oranges                           | 0.1% Oranges                           |
| Barley                        | 0.2% Oranges                                | 0.2% Oranges                           | 0.1% Oranges                           |
| Barley                        | 0.2% Oranges                                | 0.2% Oranges                           | 0.1% Oranges                           |
| Apples                        | 0.1% Oranges                                | 0.1% Oranges                           | 0.1% Oranges                           |

**Details – chronic risk assessment**

- The estimated long-term dietary intake (TMDI) was below the ADI.
- The long-term intake of residues of pyraclostrobin (F) is unlikely to present a public health concern.
The acute risk assessment is based on the ARID. The calculation is based on the large portion of the most critical consumer group.

### Show results of IESTI calculation only for crops with GAPs under assessment

| Commodity                          | MRL/input for RA (mg/kg) | Exposure (µg/kg bw) | Commodity                          | MRL/input for RA (mg/kg) | Exposure (µg/kg bw) |
|------------------------------------|---------------------------|---------------------|------------------------------------|---------------------------|---------------------|
| Pears                              | 0.50/0.29                 | 40                  | 100% Wine grapes                   | 2.17/2.70                 |
| Table grapes                       | 1/0.45                    | 33                  | Red mustards                       | 10/16/21                  |
| Apples                             | 0.50/0.29                 | 31                  | Blueberries                        | 0.4/0.21                  |
| Lettuces                           | 2/0.81                    | 31                  | Globe artichokes                   | 3/1.44/19                 |
| Cucumbers                          | 0.50/0.41                 | 27                  | Cherries (sweet)                   | 0.60/4.60                 |
| Kale                               | 1.50/0.61                 | 27                  | Chinese cabbages/p-pei-tsai        | 1.50/0.61                 |
| Goose artichokes                   | 3/1.44                    | 25                  | Table grapes                       | 1/0.45/15                 |
| Oranges                            | 2/0.18                    | 24                  | Carrots                            | 0.4/0.21                  |
| Celos                              | 1.50/0.61                 | 23                  | Celos                              | 0.4/0.21                  |
| Apricots                           | 1/0.63                    | 22                  | Raspberries (red and yellow)       | 0.50/1.7                  |
| Melons                             | 0.50/0.15                 | 22                  | Raspberries (red and yellow)       | 0.50/1.7                  |
| Chinese cabbages/p-pei-tsai        | 1.50/0.61                 | 20                  | Wine grapes                        | 0.50/1.1                 |
| Cherries (sweet)                   | 3/1.60                    | 20                  | Chinese cabbages/pe-tsai           | 0.50/1.1                 |
| Watermelons                        | 0.50/0.18                 | 18                  | Red mustards                       | 0.50/1.1                 |
| Plums                              | 0.80/0.41                 | 17                  | Head cabbages                      | 0.4/0.22                  |
| Leeks                              | 0.80/0.29                 | 17                  | Bell peppers/bell peppers          | 0.50/1.8                  |
| Carrots                            | 0.50/0.24                 | 15                  | Plums                              | 0.80/0.41                 |
| Tomatoes                           | 0.30/0.26                 | 15                  | Leeks                              | 0.80/0.29                 |
| Sweet peppers/bell peppers         | 0.50/0.25                 | 15                  | Chard/beet leaves                  | 0.50/1.2                  |
| Blackberries                       | 3/1.30                    | 14                  | Cabbage/back leaves                | 0.50/1.2                  |
| Strawberries                       | 1.50/0.78                 | 13                  | Celeriacs/turnip rooted             | 0.50/1.2                  |
| Celeriacs/turnip rooted             | 0.50/0.23                 | 13                  | Raspberries (red and yellow)       | 0.50/1.7                  |
| Chard/beet leaves                  | 1.50/0.81                 | 13                  | Apricots                           | 0.60/6.9                  |
| Cougettes                          | 0.50/0.27                 | 13                  | Fall crops                         | 0.50/1.7                  |
| Peaches                            | 0.30/0.13                 | 12                  | Carrots                            | 0.4/0.22                  |
| Gooseberries (green, red)          | 3/2.10                    | 12                  | Blackberries                       | 0.50/0.4                  |
| Raspberries (red and yellow)       | 3/1.30                    | 12                  | Red mustards                       | 0.50/0.4                  |
| Lamb’s lettuce/com salads          | 10/14.16                  | 11                  | Cotton                             | 0.50/0.4                  |
| Escarole/broad-leaved              | 0.40/0.28                 | 11                  | Fennel                             | 0.50/0.4                  |
| Roman rocket/rucula                | 10/14.16                  | 11                  | Watermelons                        | 0.50/0.4                  |
| Cauliflowers                       | 0.50/0.19                 | 11                  | Orange                             | 0.50/0.4                  |
| Cauliflowers (green, red)          | 3/2.10                    | 11                  | Orange                             | 0.50/0.4                  |
| Tomatoes                           | 0.50/0.19                 | 9                   | Raspberries (red and yellow)       | 0.50/0.4                  |
| Spring onions/green onions         | 1.50/0.9                   | 9                   | Red mustards                       | 0.50/0.4                  |
| Mandarins                          | 2/0.16                    | 9                   | Spring onions/green onions         | 1.50/0.9                   |
| Broccoli                           | 0.50/0.19                 | 9                   | Carrots                            | 0.4/0.22                  |
| Radishes                           | 0.50/0.3                   | 9                   | Radishes                           | 0.50/0.3                   |
| Quinces                            | 0.50/0.29                 | 7.1                 | Yellow                                                                  |
| Sprouts                            | 0.60/3.1                   | 7                   | Lettuce                            | 0.50/0.3                   |
| Lemons                             | 0.50/0.3                   | 7                   | Acai                               | 0.50/0.3                   |
| Parsnips                           | 0.30/0.18                 | 6.8                 | Tomato                             | 0.50/0.3                   |
| Aubergines/egg plants              | 0.30/0.26                 | 6.5                 | Cranberry                          | 0.30/0.26                 |
| Cranberry                          | 3/2.10                    | 6.5                 | Pineapple                          | 0.30/0.5                   |
| Orions                             | 1.50/0.5                   | 6.4                 | Orions                             | 1.50/0.5                   |
| Medlar                             | 0.50/0.29                 | 6.1                 | Mango                             | 0.50/0.3                   |
| Pumpkins                           | 0.50/0.15                 | 5.9                 | Pumpkins                           | 0.50/0.15                 |
| Beans (with pods)                  | 0.60/3.7                   | 5.3                 | Beans (with pods)                  | 0.60/3.7                   |
| Swedes/nut/bagases                 | 0.09/0.6                   | 4.1                 | Swedes/nut/bagases                 | 0.09/0.6                   |
| Potatoes                           | 0.02/0.02                  | 3.1                 | Potatoes                           | 0.02/0.02                  |
| Beetnuts                           | 0.10/0.6                   | 2.1                 | Beetnuts                           | 0.10/0.6                   |
| Limes                              | 2/0.13                    | 2.6                 | Limes                              | 0.10/0.6                   |
| Pistachios                         | 10/4.50                   | 2.6                 | Pistachios                         | 0.10/0.6                   |
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| Item                                      | Value 1 | Value 2 | Value 3 | Value 4 | Value 5 |
|-------------------------------------------|---------|---------|---------|---------|---------|
| 8% Dewberries                            | 2/1.3   | 2.3     |         |         |         |
| 7% Turnips                                | 0.09/0.06 | 2.2     |         |         |         |
| 7% Papayas                                | 0.07/0.05 | 2.1     |         |         |         |
| 7% Barley                                 | 0.10/0.05 | 2.0     |         |         |         |
| 7% Bananas                                | 0.02/0.02 | 1.9     |         |         |         |
| 6% Azarole/Mediterranean                  | 0.02/0.01 | 1.9     |         |         |         |
| 6% Satellites                             | 0.01/0.06 | 1.9     |         |         |         |
| 6% Milk: Goat                             | 0.01/0.07 | 1.6     |         |         |         |
| 5% Bovine: Liver                          | 0.05/0.2 | 1.6     |         |         |         |
| 5% Willow/Swiss endives                   | 0.08/0.04 | 1.6     |         |         |         |
| 4% Peas (with pods)                       | 0.60/0.37 | 1.3     |         |         |         |
| 4% Brussels sprouts                       | 0.30/0.14 | 1.2     |         |         |         |
| 3% Cherries                               | 0.20/0.81 | 1.0     |         |         |         |
| 3% Kohlrabies                             | 0.02/0.02 | 1.0     |         |         |         |
| 3% Sweet corn                             | 0.04/0.02 | 0.91    |         |         |         |
| 3% Parsley                                | 0.20/0.81 | 0.89    |         |         |         |
| 3% Lentils                                | 0.50/0.13 | 0.87    |         |         |         |
| 3% Poultry: Muscle/meat                   | 0.05/0.05 | 0.85    |         |         |         |
| 3% Cherries                               | 0.50/0.27 | 0.76    |         |         |         |
| 2% Garlic                                 | 0.30/0.21 | 0.74    |         |         |         |
| 2% Beans                                  | 0.30/0.04 | 0.73    |         |         |         |
| 2% Passionnuts/maracujas                  | 0.20/0.1 | 0.68    |         |         |         |
| 2% Chives                                 | 0.20/0.81 | 0.66    |         |         |         |
| 2% Eggs: Chicken                         | 0.05/0.05 | 0.62    |         |         |         |
| 2% Sage                                   | 0.20/0.81 | 0.61    |         |         |         |
| 2% Swine: Muscle/meat                    | 0.05/0.05 | 0.61    |         |         |         |
| 2% Balsam and edible flowers              | 0.20/0.81 | 0.59    |         |         |         |
| 2% Peas (without pods)                    | 0.15/0.07 | 0.57    |         |         |         |
| 1% Oat                                    | 1.0/0.35 | 0.39    |         |         |         |
| 1% Bovine: Muscle/meat                    | 0.05/0.05 | 0.36    |         |         |         |
| 1% Other farmed animals                   | 0.05/0.05 | 0.35    |         |         |         |
| 1% HOPS (dry)                             | 15/7.4   | 0.31    |         |         |         |
| 1% Equine: Muscle/meat                    | 0.05/0.05 | 0.30    |         |         |         |
| 1.0% Wheat                                | 0.20/0.20 | 0.29    |         |         |         |
| 0.9% Parsley roots/Hamburg roots          | 0.10/0.06 | 0.27    |         |         |         |
| 0.8% Pea                                  | 0.30/0.04 | 0.26    |         |         |         |
| 0.8% Rice                                  | 0.09/0.02 | 0.25    |         |         |         |
| 0.8% Swine: Liver                         | 0.05/0.2 | 0.25    |         |         |         |
| 0.8% Bovine: Kidney                       | 0.05/0.05 | 0.24    |         |         |         |
| 0.7% Asparagus                            | 0.02/0.02 | 0.22    |         |         |         |
| 0.7% Sheep: Muscle/meat                   | 0.05/0.05 | 0.21    |         |         |         |
| 0.5% Bovine: Kidney                       | 0.05/0.05 | 0.19    |         |         |         |
| 0.5% Celery leaves                        | 0.20/0.81 | 0.15    |         |         |         |
| 0.4% Sunflower seeds                      | 0.30/0.04 | 0.13    |         |         |         |
| 0.4% Coffee beans                         | 0.30/0.15 | 0.11    |         |         |         |
| 0.3% Bovine: Fat tissue                   | 0.05/0.05 | 0.10    |         |         |         |
| 0.3% Sorghum                              | 0.50/0.03 | 0.10    |         |         |         |
| 0.3% Swine: Fat tissue                    | 0.05/0.05 | 0.09    |         |         |         |
| 0.3% Chesnut                              | 0.02/0.02 | 0.08    |         |         |         |
| 0.2% Horse-radishes                       | 0.30/0.18 | 0.07    |         |         |         |
| 0.2% Walnuts                              | 0.02/0.02 | 0.07    |         |         |         |
| 0.2% Hazelnuts/obnuts                     | 0.02/0.02 | 0.07    |         |         |         |
| 0.2% Shallots                             | 0.30/0.21 | 0.07    |         |         |         |
| 0.2% Swine: Kidney                        | 0.05/0.05 | 0.06    |         |         |         |
| 0.2% Peanuts/groundnuts                   | 0.02/0.02 | 0.06    |         |         |         |
| 0.2% Almonds                              | 0.02/0.02 | 0.06    |         |         |         |
| 0.2% Poultry: Liver                       | 0.05/0.05 | 0.06    |         |         |         |
| 0.2% Pecans                               | 0.02/0.02 | 0.06    |         |         |         |
| 0.2% Cashew nuts                          | 0.02/0.02 | 0.05    |         |         |         |
| 0.2% Thyme                                | 0.20/0.81 | 0.05    |         |         |         |
| 0.2% Soybeans                            | 0.22/0.02 | 0.05    |         |         |         |
| 0.08% Rosemary                            | 0.20/0.81 | 0.02    |         |         |         |
| 0.06% Bovine: Fat tissue                  | 0.02/0.02 | 0.02    |         |         |         |
| 0.04% Macadamia                           | 0.02/0.02 | 0.01    |         |         |         |
| 0.03% Laurel/bay leaves                   | 0.20/0.81 | 0.01    |         |         |         |
| 0.02% Pine nut kernels                    | 0.02/0.02 | 0.01    |         |         |         |
| 0.02% Poultry: Fat tissue                 | 0.05/0.05 | 0.01    |         |         |         |
| 0.01% Wire grapes                         | 2/1.27   | 0.00    |         |         |         |

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**Modification of the existing MRLs for pyraclostrobin in sweet corn**

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### Results for children

| Processed commodities | ARfD/ADI MRL for RA (mg/kg) | Exposure (µg/kg bw) | IESTI |
|-----------------------|-----------------------------|---------------------|-------|
| 90%                   | 3/0.94                      | 27                  | 43%   |
| 70%                   | 2/0.48                      | 21                  | 40%   |
| 67%                   | 0.6/0.29                    | 20                  | 33%   |
| 57%                   | 1.5/0.38                    | 17                  | 33%   |
| 53%                   | 0.5/0.18                    | 16                  | 29%   |
| 52%                   | 1.5/0.5                     | 16                  | 24%   |
| 50%                   | 3/0.94                      | 15                  | 21%   |
| 38%                   | 0.4/0.17                    | 12                  | 17%   |
| 34%                   | 0.5/0.17                    | 10                  | 16%   |
| 31%                   | 0.5/0.12                    | 9.3                 | 13%   |
| 29%                   | 0.4/0.14                    | 8.7                 | 12%   |
| 27%                   | 0.5/0.12                    | 8.2                 | 9%    |
| 25%                   | 0.5/0.14                    | 7.6                 | 9%    |
| 24%                   | 4/0.1                       | 7.1                 | 9%    |

### Results for adults

| Processed commodities | ARfD/ADI MRL for RA (mg/kg) | Exposure (µg/kg bw) | IESTI |
|-----------------------|-----------------------------|---------------------|-------|
| 43%                   | 1.5/0.38                    | 13                  | 43%   |
| 40%                   | 3/0.94                      | 12                  | 40%   |
| 33%                   | 2/0.48                      | 10                  | 33%   |
| 33%                   | 0.5/0.18                    | 9.9                 | 33%   |
| 29%                   | 3/0.94                      | 8.6                 | 29%   |
| 24%                   | 1.5/0.38                    | 7.3                 | 24%   |
| 21%                   | 1.5/0.5                     | 6.3                 | 21%   |
| 17%                   | 0.8/0.29                    | 5.1                 | 17%   |
| 16%                   | 0.5/0.12                    | 4.9                 | 16%   |
| 13%                   | 0.5/0.17                    | 4.7                 | 13%   |
| 12%                   | 0.4/0.17                    | 3.8                 | 12%   |
| 9%                    | 0.5/0.12                    | 2.8                 | 9%    |
| 9%                    | 0.5/0.14                    | 2.6                 | 9%    |
| 9%                    | 0.6/0.31                    | 2.6                 | 9%    |

### Conclusion:

The estimated short term intake (IESTI) exceeded the toxicological reference value for 4 commodities. For processed commodities, no exceedance of the ARfD/ADI was identified.
## Appendix D – Input values for the exposure calculations

### D.1. Consumer risk assessment

| Code   | Commodity                  | Existing/proposed MRL | Source/type of MRL | Chronic risk assessment | Acute risk assessment |
|--------|----------------------------|------------------------|--------------------|-------------------------|-----------------------|
|        |                            |                        |                    |                          |                       |
| 110010 | Grapefruits                | 2                      | EFSA (2018d)       | 0.054 STMR-RAC*PeF     | 0.13 HR-RAC*PeF       |
| 110020 | Oranges                    | 2                      | EFSA (2018d)       | 0.084 STMR-RAC*PeF     | 0.182 HR-RAC*PeF      |
| 110030 | Lemons                     | 2                      | EFSA (2018d)       | 0.054 STMR-RAC*PeF     | 0.13 HR-RAC*PeF       |
| 110040 | Limes                      | 2                      | EFSA (2018d)       | 0.054 STMR-RAC*PeF     | 0.13 HR-RAC*PeF       |
| 110050 | Mandarins                  | 2                      | EFSA (2018d)       | 0.0689 STMR-RAC*PeF    | 0.156 HR-RAC*PeF      |
| 120010 | Almonds                    | 0.02                   | EFSA (2011b)       | 0.02 STMR-RAC          | 0.02 HR-RAC           |
| 120020 | Brazil nuts                | 0.02                   | EFSA (2011b)       | 0.02 STMR-RAC          | 0.02 HR-RAC           |
| 120030 | Cashew nuts                | 0.02                   | EFSA (2011b)       | 0.02 STMR-RAC          | 0.02 HR-RAC           |
| 120040 | Chestnuts                  | 0.02                   | EFSA (2011b)       | 0.02 STMR-RAC          | 0.02 HR-RAC           |
| 120050 | Hazelnuts/cobnuts          | 0.02                   | EFSA (2011b)       | 0.02 STMR-RAC          | 0.02 HR-RAC           |
| 120070 | Macadamia                  | 0.02                   | EFSA (2011b)       | 0.02 STMR-RAC          | 0.02 HR-RAC           |
| 120080 | Pecans                     | 0.02                   | EFSA (2011b)       | 0.02 STMR-RAC          | 0.02 HR-RAC           |
| 120090 | Pine nut kernels           | 0.02                   | EFSA (2011b)       | 0.02 STMR-RAC          | 0.02 HR-RAC           |
| 120100 | Pistachios                 | 1                      | EFSA (2011b)       | 0.22 STMR-RAC          | 0.45 HR-RAC           |
| 120110 | Walnuts                    | 0.02                   | EFSA (2011b)       | 0.02 STMR-RAC          | 0.02 HR-RAC           |
| 130010 | Apples                     | 0.5                    | EFSA (2011b)       | 0.14 STMR-RAC          | 0.29 HR-RAC           |
| 130020 | Pears                      | 0.5                    | EFSA (2011b)       | 0.14 STMR-RAC          | 0.29 HR-RAC           |
| 130030 | Quinces                    | 0.5                    | EFSA (2011b)       | 0.14 STMR-RAC          | 0.29 HR-RAC           |
| 130040 | Medlar                     | 0.5                    | EFSA (2011b)       | 0.14 STMR-RAC          | 0.29 HR-RAC           |
| 130050 | Loquats/Japanese medlars    | 0.5                    | EFSA (2011b)       | 0.14 STMR-RAC          | 0.29 HR-RAC           |
| 130090 | Other pome fruit           | 0.5                    | EFSA (2011b)       | 0.14 STMR-RAC          | 0.29 HR-RAC           |
| 140010 | Apricots                   | 1                      | EFSA (2011b)       | 0.43 STMR-RAC          | 0.63 HR-RAC           |
| 140020 | Cherries (sweet)           | 3                      | EFSA (2011b)       | 0.51 STMR-RAC          | 1.6 HR-RAC            |
| 140030 | Peaches                    | 0.3                    | EFSA (2011b)       | 0.07 STMR-RAC          | 0.13 HR-RAC           |
| 140040 | Plums                      | 0.8                    | EFSA (2011b)       | 0.09 STMR-RAC          | 0.41 HR-RAC           |
| 151010 | Table grapes               | 1                      | EFSA (2018b)       | 0.36 STMR-RAC          | 0.45 HR-RAC           |
| 151020 | Wine grapes                | 2                      | EFSA (2011b)       | 0.48 STMR-RAC          | 1.27 HR-RAC           |
| 152000 | Strawberries               | 1.5                    | EFSA (2011b)       | 0.2 STMR-RAC           | 0.78 HR-RAC           |
| 153010 | Blackberries               | 3                      | EFSA (2011b)       | 0.87 STMR-RAC          | 1.3 HR-RAC            |
| 153020 | Dewberries                 | 2                      | EFSA (2011b)       | 0.87 STMR-RAC          | 1.3 HR-RAC            |
| 153030 | Raspberries (red and yellow)| 3                      | EFSA (2011b)       | 0.87 STMR-RAC          | 1.3 HR-RAC            |
| 154010 | Blueberries                | 4                      | EFSA (2011b)       | 0.78 STMR-RAC          | 2.1 HR-RAC            |
| 154020 | Cranberries                | 3                      | EFSA (2011b)       | 0.94 STMR-RAC          | 2.1 HR-RAC            |
| 154030 | Currants (red, black and white) | 3 | EFSA (2011b) | 0.94 STMR-RAC | 2.1 HR-RAC |
| 154040 | Gooseberries (green, red and yellow) | 3 | EFSA (2011b) | 0.94 STMR-RAC | 2.1 HR-RAC |
| Code    | Commodity                                                                 | Existing/proposed MRL | Source/type of MRL | Chronic risk assessment | Acute risk assessment |
|---------|---------------------------------------------------------------------------|-----------------------|--------------------|------------------------|----------------------|
|         |                                                                           |                       |                    | Input value (mg/kg)    | Comment              |
|         |                                                                           |                       |                    | Comment               |                      |
|         |                                                                           |                       |                    | Input value (mg/kg)    |                      |
|         |                                                                           |                       |                    | Comment               |                      |
| 154050  | Rose hips                                                                 | 3                     | EFSA (2011b)       | 0.94                  | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 2.1                  | HR-RAC               |
| 154060  | Mulberries (black and white)                                              | 3                     | EFSA (2011b)       | 0.94                  | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 2.1                  | HR-RAC               |
| 154070  | Azarole/Mediterranean medlar                                              | 3                     | (EFSA, 2011b)      | 0.94                  | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 2.1                  | HR-RAC               |
| 154080  | Elderberries                                                              | 3                     | EFSA (2011b)       | 0.94                  | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 2.1                  | HR-RAC               |
| 162030  | Passion fruits/maracujas                                                  | 0.2                   | EFSA (2018d)       | 0.05                  | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 0.1                  | HR-RAC               |
| 163020  | Bananas                                                                   | 0.02                  | EFSA (2011b)       | 0.02                  | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 0.02                 | HR-RAC               |
| 163030  | Mangoes                                                                   | 0.05                  | EFSA (2011b)       | 0.05                  | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 0.05                 | HR-RAC               |
| 163040  | Papayas                                                                   | 0.07                  | EFSA (2011b)       | 0.05                  | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 0.05                 | HR-RAC               |
| 163080  | Pineapples                                                                | 0.3                   | EFSA (2018d)       | 0.0135                | STMR-RAC*PeF         |
|         |                                                                           |                       |                    |                       | 0.0513               | HR-RAC*PeF           |
| 211000  | Potatoes                                                                  | 0.02                  | EFSA (2011b)       | 0.02                  | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 0.02                 | HR-RAC               |
| 213010  | Beetroots                                                                 | 0.1                   | EFSA (2011b)       | 0.03                  | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 0.06                 | HR-RAC               |
| 213020  | Carrots                                                                   | 0.5                   | EFSA (2011b)       | 0.12                  | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 0.24                 | HR-RAC               |
| 213030  | Celeriacs/turnip rooted celeries                                          | 0.5                   | EFSA (2017)        | 0.16                  | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 0.23                 | HR-RAC               |
| 213040  | Horseradishes                                                             | 0.3                   | EFSA (2011b)       | 0.08                  | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 0.18                 | HR-RAC               |
| 213050  | Jerusalem artichokes                                                      | 0.06                  | EFSA (2013)        | 0.03                  | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 0.06                 | HR-RAC               |
| 213060  | Parsnips                                                                  | 0.3                   | EFSA (2011b)       | 0.08                  | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 0.18                 | HR-RAC               |
| 213070  | Parsley roots/Hamburg roots parsley                                       | 0.1                   | EFSA (2011b)       | 0.03                  | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 0.06                 | HR-RAC               |
| 213080  | Radishes                                                                  | 0.5                   | EFSA (2011b)       | 0.08                  | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 0.3                  | HR-RAC               |
| 213090  | Salsifes                                                                  | 0.1                   | EFSA (2011b)       | 0.03                  | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 0.06                 | HR-RAC               |
| 213100  | Swedes/rutabagas                                                         | 0.09                  | EFSA (2014b)       | 0.02                  | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 0.06                 | HR-RAC               |
| 213110  | Turnips                                                                   | 0.09                  | EFSA (2014b)       | 0.02                  | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 0.06                 | HR-RAC               |
| 220010  | Garlic                                                                    | 0.3                   | EFSA (2011b)       | 0.02                  | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 0.21                 | HR-RAC               |
| 220020  | Onions                                                                    | 1.5                   | EFSA (2011b)       | 0.06                  | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 0.21                 | HR-RAC               |
| 220030  | Shallots                                                                  | 0.3                   | EFSA (2011b)       | 0.02                  | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 0.21                 | HR-RAC               |
| 220040  | Spring onions/green onions and Welsh onions                              | 1.5                   | EFSA (2011b)       | 0.42                  | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 0.6                  | HR-RAC               |
| 231010  | Tomatoes                                                                  | 0.3                   | EFSA (2011b)       | 0.1                   | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 0.26                 | HR-RAC               |
| 231020  | Sweet peppers/bell peppers                                               | 0.5                   | EFSA (2011b)       | 0.08                  | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 0.25                 | HR-RAC               |
| 231030  | Aubergines/egg plants                                                     | 0.3                   | EFSA (2011b)       | 0.01                  | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 0.26                 | HR-RAC               |
| 232010  | Cucumbers                                                                 | 0.5                   | EFSA (2011b)       | 0.15                  | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 0.41                 | HR-RAC               |
| 232020  | Gherkins                                                                  | 0.5                   | EFSA (2011b)       | 0.15                  | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 0.27                 | HR-RAC               |
| 232030  | Courgettes                                                                | 0.5                   | EFSA (2011b)       | 0.15                  | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 0.27                 | HR-RAC               |
| 233010  | Melons                                                                    | 0.5                   | EFSA (2011b)       | 0.055                 | STMR-RAC*PeF         |
|         |                                                                           |                       |                    |                       | 0.145                | HR-RAC*PeF           |
| 233020  | Pumpkins                                                                  | 0.5                   | EFSA (2011b)       | 0.055                 | STMR-RAC*PeF         |
|         |                                                                           |                       |                    |                       | 0.145                | HR-RAC*PeF           |
| 233030  | Watermelons                                                               | 0.5                   | EFSA (2011b)       | 0.055                 | STMR-RAC*PeF         |
|         |                                                                           |                       |                    |                       | 0.145                | HR-RAC*PeF           |
| 234000  | Sweet corn                                                                | 0.04                  | Current assessment | 0.016                 | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 0.021                | HR-RAC               |
| 241010  | Broccoli                                                                  | 0.5                   | EFSA (2018d)       | 0.02                  | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 0.19                 | HR-RAC               |
| 241020  | Cauliflower                                                               | 0.5                   | EFSA (2018d)       | 0.02                  | STMR-RAC             |
|         |                                                                           |                       |                    |                       | 0.19                 | HR-RAC               |
| Code     | Commodity                  | Existing/proposed MRL | Source/type of MRL | Chronic risk assessment | Acute risk assessment |
|----------|----------------------------|-----------------------|--------------------|-------------------------|-----------------------|
| 241990   | Other flowering brassica   | 0.5                   | EFSA (2018d)       | 0.02                    | STMR-RAC              |
| 242010   | Brussels sprouts           | 0.3                   | EFSA (2011b)       | 0.03                    | STMR-RAC              |
| 242020   | Head cabbages              | 0.4                   | EFSA (2018d)       | 0.01                    | STMR-RAC              |
| 243010   | Chinese cabbages/pe-tsai   | 1.5                   | EFSA (2011b)       | 0.19                    | STMR-RAC              |
| 243020   | Kales                      | 1.5                   | EFSA (2011b)       | 0.19                    | STMR-RAC              |
| 243990   | Other leafy brassica       | 1.5                   | EFSA (2011b)       | 0.18                    | STMR-RAC              |
| 244000   | Kohlrabies                 | 0.02                  | EFSA (2011b)       | 0.02                    | STMR-RAC              |
| 251010   | Lamb's lettuce/corn salads| 10                    | EFSA (2018d)       | 2.31                    | STMR-RAC              |
| 251020   | Lettuces                   | 2                     | EFSA (2018d)       | 0.26                    | STMR-RAC              |
| 251030   | Escaroles/broad-leaved endives| 0.4                | EFSA (2011b)       | 0.04                    | STMR-RAC              |
| 251040   | Cress and other sprouts and shoots| 10                | EFSA (2018d)       | 2.31                    | STMR-RAC              |
| 251050   | Land cress                 | 10                    | EFSA (2018d)       | 2.5                     | STMR-RAC              |
| 251060   | Roman rocket/rucola        | 10                    | EFSA (2018d)       | 2.5                     | STMR-RAC              |
| 251070   | Red mustards               | 10                    | EFSA (2018d)       | 2.5                     | STMR-RAC              |
| 251080   | Baby leaf crops (including brassica species) | 10 | EFSA (2018d) | 2.5 | STMR-RAC | 4.16 | HR-RAC |
| 252010   | Spinaches                  | 0.6                   | EFSA (2017)        | 0.05                    | STMR-RAC              |
| 252030   | Chards/beet leaves         | 1.5                   | EFSA (2016)        | 0.26                    | STMR-RAC              |
| 255000   | Witloofs/Belgian endives   | 0.09                  | EFSA (2017)        | 0.03                    | STMR-RAC              |
| 256010   | Chervil                     | 2                     | EFSA (2011b)       | 0.26                    | STMR-RAC              |
| 256020   | Chives                      | 2                     | EFSA (2011b)       | 0.26                    | STMR-RAC              |
| 256030   | Celery leaves              | 2                     | EFSA (2011b)       | 0.26                    | STMR-RAC              |
| 256040   | Parsley                    | 2                     | EFSA (2011b)       | 0.26                    | STMR-RAC              |
| 256050   | Sage                       | 2                     | EFSA (2011b)       | 0.26                    | STMR-RAC              |
| 256060   | Rosemary                   | 2                     | EFSA (2011b)       | 0.26                    | STMR-RAC              |
| 256070   | Thyme                      | 2                     | EFSA (2011b)       | 0.26                    | STMR-RAC              |
| 256080   | Basil and edible flowers   | 2                     | EFSA (2011b)       | 0.26                    | STMR-RAC              |
| 256090   | Laurel/bay leaves          | 2                     | EFSA (2011b)       | 0.26                    | STMR-RAC              |
| 256100   | Tarragon                   | 2                     | EFSA (2011b)       | 0.26                    | STMR-RAC              |
| 260010   | Beans (with pods)          | 0.6                   | EFSA (2017)        | 0.13                    | STMR-RAC              |
| 260030   | Peas (with pods)           | 0.6                   | EFSA (2017)        | 0.13                    | STMR-RAC              |
| 260040   | Peas (without pods)        | 0.15                  | EFSA (2017)        | 0.01                    | STMR-RAC              |
| 270010   | Asparagus                  | 0.02                  | EFSA (2011b)       | 0.02                    | STMR-RAC              |
| 270030   | Celeries                   | 1.5                   | EFSA (2017)        | 0.17                    | STMR-RAC              |
| 270040   | Florence fennels           | 1.5                   | EFSA (2017)        | 0.17                    | STMR-RAC              |
| 270050   | Globe artichokes           | 3                     | EFSA (2018d)       | 0.25                    | STMR-RAC              |
| 270060   | Leeks                      | 0.8                   | EFSA (2018d)       | 0.26                    | STMR-RAC              |
| 300010   | Beans                      | 0.3                   | EFSA (2011b)       | 0.04                    | STMR-RAC              |
| 300020   | Lentils                    | 0.5                   | EFSA (2011b)       | 0.13                    | STMR-RAC              |
| Code     | Commodity               | Existing/proposed MRL | Source/type of MRL | Chronic risk assessment | Acute risk assessment |
|----------|-------------------------|-----------------------|--------------------|------------------------|-----------------------|
|          |                         |                       |                    | Input value (mg/kg)    | Comment               |
|          |                         |                       |                    | Comment                | Input value (mg/kg)   |
|          |                         |                       |                    |                        | Comment               |
| 300030   | Peas                    | 0.3                   | EFSA (2011b)       | 0.04                   | STMR-RAC              |
| 300040   | Lupins/lupini beans     | 0.05                  | EFSA (2011b)       | 0.02                   | STMR-RAC              |
| 401020   | Peanuts/groundnuts      | 0.04                  | EFSA (2011b)       | 0.02                   | STMR-RAC              |
| 401050   | Sunflower seeds         | 0.3                   | EFSA (2011b)       | 0.04                   | STMR-RAC              |
| 401070   | Soyabeans               | 0.2                   | EFSA (2018a)       | 0.02                   | STMR-RAC              |
| 500010   | Barley                  | 1.0                   | EFSA (2011b)       | 0.35                   | STMR-RAC              |
| 500030   | Maize/corn              | 0.02                  | EFSA (2011b)       | 0.01                   | STMR-RAC              |
| 500050   | Oat                     | 1.0                   | EFSA (2011b)       | 0.35                   | STMR-RAC              |
| 500060   | Rice                    | 0.09                  | EFSA (2018c)       | 0.02                   | STMR-RAC              |
| 500070   | Rye                     | 0.2                   | EFSA (2011b)       | 0.02                   | STMR-RAC              |
| 500080   | Sorghum                 | 0.5                   | EFSA (2011b)       | 0.03                   | STMR-RAC              |
| 500090   | Wheat                   | 0.2                   | EFSA (2011b)       | 0.02                   | STMR-RAC              |
| 620000   | Coffee beans            | 0.3                   | EFSA (2011b)       | 0.03                   | STMR-RAC              |
| 700000   | HOPS (dried)            | 15.0                  | EFSA (2011b)       | 3.45                   | STMR-RAC              |
| 900010   | Sugar beet roots        | 0.2                   | EFSA (2011b)       | 0.04                   | STMR-RAC              |
| 900030   | Chicory roots           | 0.08                  | EFSA (2014a)       | 0.03                   | STMR-RAC              |
| 1011010  | Swine: Muscle/meat      | 0.05                  | EFSA (2011b)       | 0.05                   | LOQ                   |
| 1011020  | Swine: Fat tissue       | 0.05                  | EFSA (2011b)       | 0.05                   | LOQ                   |
| 1011030  | Swine: Liver            | 0.05                  | EFSA (2011b)       | 0.2                    | STMR-RAC*CF           |
| 1011040  | Swine: Kidney           | 0.05                  | EFSA (2011b)       | 0.05                   | LOQ                   |
| 1012010  | Bovine: Muscle/meat     | 0.05                  | EFSA (2018a)       | 0.05                   | STMR-RAC              |
| 1012020  | Bovine: Fat tissue      | 0.05                  | EFSA (2018a)       | 0.05                   | STMR-RAC              |
| 1012030  | Bovine: Liver           | 0.05                  | EFSA (2018a)       | 0.2                    | STMR-RAC*CF           |
| 1012040  | Bovine: Kidney          | 0.05                  | EFSA (2018a)       | 0.05                   | STMR-RAC              |
| 1013010  | Sheep: Muscle/meat      | 0.05                  | EFSA (2018a)       | 0.05                   | STMR-RAC              |
| 1013020  | Sheep: Fat tissue       | 0.05                  | EFSA (2018a)       | 0.05                   | STMR-RAC              |
| 1013030  | Sheep: Liver            | 0.05                  | EFSA (2018a)       | 0.2                    | STMR-RAC*CF           |
| 1013040  | Sheep: Kidney           | 0.05                  | EFSA (2018a)       | 0.05                   | STMR-RAC              |
| 1014010  | Goat: Muscle/meat       | 0.05                  | EFSA (2018a)       | 0.05                   | STMR-RAC              |
| 1014020  | Goat: Fat tissue        | 0.05                  | EFSA (2018a)       | 0.05                   | STMR-RAC              |
| 1014030  | Goat: Liver             | 0.05                  | EFSA (2018a)       | 0.2                    | STMR-RAC*CF           |
| 1014040  | Goat: Kidney            | 0.05                  | EFSA (2018a)       | 0.05                   | STMR-RAC              |
| 1020010  | Milk: Cattle            | 0.01                  | EFSA (2018a)       | 0.068                  | STMR-RAC*CF           |
| 1020020  | Milk: Sheep             | 0.01                  | EFSA (2018a)       | 0.068                  | STMR-RAC*CF           |
| 1020030  | Milk: Goat              | 0.01                  | EFSA (2018a)       | 0.068                  | STMR-RAC*CF           |
| 1020040  | Milk: Horse             | 0.01                  | EFSA (2018a)       | 0.068                  | STMR-RAC*CF           |
| 1020990  | Milk: Others            | 0.01                  | EFSA (2018a)       | 0.068                  | STMR-RAC*CF           |
# Appendix E – Used compound codes

| Code/trivial name                     | IUPAC name/SMILES notation/InChiKey<sup>(a)</sup> | Structural formula<sup>(b)</sup> |
|---------------------------------------|-------------------------------------------------|----------------------------------|
| Pyraclostrobin methyl 2-[1-(4-chlorophenyl]-1H-pyrazol-3-yl)methoxycarbamate | O=C(OC)N(O)C1ccccc1COc1cccn(n1)c1ccc(Cl)cc1 HZRSNVGNWUDEFX-UHFFFAOYSA-N | ![Structural formula](image1.png) |
| Desmethoxy metabolite (500M07, BF 500-3) methyl [2-([(1-(4-chlorophenyl)-1H-pyrazol-3-yl)]oxy) methyl]phenyl]carbamate | O=C(OC)Nc1ccccc1COc1cccn(n1)c1ccc(Cl)cc1 SEUOYURJKYLAPC-UHFFFAOYSA-N | ![Structural formula](image2.png) |
| 500M04 1-(4-chlorophenyl) -1H-pyrazol-3-ol | Clc1ccc(cc1)n1ccc(O)n1 DRENHOMDLNDOG-UHFFFAOYSA-N | ![Structural formula](image3.png) |
| 500M06 1-(4-chlorophenyl)-3-[(2-[(methoxycarbonyl)amino] benzyl)oxy]-1H-pyrazol-4-yl [β-D-glucopyranosiduronic acid | O=C(OC)Nc1ccccc1COc1ccncc1O[C@@H]1O[C@@H] ([C@@H]O)[C@H]1O[C@@H]1O[C@@H]10)c1ccc(Cl)cc1 AKGNRMSNGBEIHM-BPDSMXLESA-N | ![Structural formula](image4.png) |

<sup>(a)</sup>: ACD/Name 2018.2.2 ACD/Labs 2018 Release (File version N50E41, Build 103230, 21 Jul 2018).  
<sup>(b)</sup>: ACD/ChemSketch 2018.2.2 ACD/Labs 2018 Release (File version C60H41, Build 106041, 7 Dec 2018).