FINAL REGISTRATION REPORT

Part B

Section 8

Environmental Fate

Detailed summary of the risk assessment

Product code: CHR/I/ADEL 280 SC

Product name(s): ADEL 280 SC/ PYRIFOS ADE 280 SC

Chemical active substances:

Acetamiprid, 250 g/L
Deltamethrin, 30 g/L

Central Zone

Zonal Rapporteur Member State: Poland

CORE ASSESSMENT

(authorization)

Applicant: Innvigo Sp z o.o.

Submission date: July 2021

MS Finalisation date: 26/01/2026

Version history

When	What
September 2021	Dossier sent for evaluation
February 2022	Updated by Applicant
March 2022	zRMS finalised evaluation
October 2024	Final version prepared by zRMS after Commenting period
January 2026	Update due to change in PUF value for metabolite IM-I-5

Table of Contents

8 Fate and behaviour in the environment (KCP 9)....................................... 5

8.1 Critical GAP and overall conclusions 6

8.2 Metabolites considered in the assessment 11

8.3 Rate of degradation in soil (KCP 9.1.1) 12
8.3.1 Aerobic degradation in soil (KCP 9.1.1.1) 12
8.3.1.1 Acetamiprid and its metabolites 13
8.3.1.2 Deltamethrin and its metabolites 18
8.3.2 Anaerobic degradation in soil (KCP 9.1.1.1) 21
Table 8.3-6: Summary of anaerobic degradation rates for Acetamiprid- laboratory studies (EFSA Journal 2016;14(11):4610) 21
Table 8.3-7: Summary of anaerobic degradation rates for Deltamethrin laboratory studies 22

8.4 Field studies (KCP 9.1.1.2) 22
8.4.1 Soil dissipation testing on a range of representative soils (KCP 9.1.1.2.1) . 22
8.4.1.1 Acetamiprid and its metabolites (EFSA Journal 2016;14(11):4610) 22
8.4.2 Soil accumulation testing (KCP 9.1.1.2.2) 23

8.5 Mobility in soil (KCP 9.1.2) 23
8.5.1 Acetamiprid and its metabolites (EFSA Journal 2016;14(11):4610) 23
8.5.2 Deltamethrin and its metabolites 24
8.5.3 Column leaching (KCP 9.1.2.1) 25
8.5.4 Lysimeter studies (KCP 9.1.2.2) 25
8.5.5 Field leaching studies (KCP 9.1.2.3) 25

8.6 Degradation in the water/sediment systems (KCP 9.2, KCP 9.2.1, KCP 9.2.2, KCP 9.2.3) 26
8.6.1 Acetamiprid and its metabolites 26
8.6.2 Deltamethrin and its metabolites 29

8.7 Predicted Environmental Concentrations in soil (PEC_{soil}) (KCP 9.1.3) 30
8.7.1 Justification for new endpoints 31
8.7.2 Active substance(s) and relevant metabolite(s) 31
8.7.2.1 Acetamiprid and its metabolites 32
8.7.2.2 Deltamethrin and its metabolites 40
8.7.2.3 PEC_{soil} of CHR/I/ADEL 280 SC 42

8.8 Predicted Environmental Concentrations in groundwater (PEC_{gw}) (KCP 9.2.4) 44
8.8.1 Justification for new endpoints 44
8.8.2 Active substance(s) and relevant metabolite(s) (KCP 9.2.4.1) 44
8.8.2.1 Acetamiprid and its metabolites 45
8.8.2.2 Deltamethrin and its metabolites 52

8.9 Predicted Environmental Concentrations in surface water (PEC_{sw}) (KCP 9.2.5) 55
8.9.1 Justification for new endpoints 57
8.9.2 Active substance(s), relevant metabolite(s) and the formulation (KCP 9.2.5) 57
8.9.2.1 Acetamiprid and its metabolites 59
8.9.2.2 Deltamethrin and its metabolites 71
8.9.2.3 $PEC_{sw/sed}$ of CHR/I/ADEL 280 SC 78

8.10 Fate and behaviour in air (KCP 9.3, KCP 9.3.1) 80

Appendix 1 Lists of data considered in support of the evaluation 82

Appendix 2 Detailed evaluation of the new Annex II studies 91

Appendix 3 Additional information provided by the applicant (e.g. detailed modelling data) 91

zRMS comments:
The text highlighted in grey was provided by the evaluator.
The evaluation of PECgw assessment updated with PUF=0 for metabolite MI-I-5 is provided in green

8 Fate and behaviour in the environment (KCP 9)

Data matching studies for acetamiprid have been evaluated by RMS – Netherland and later by Po-land. As a result of the assessment all reports were accepted and considered as equivalent to protected studies. Therefore, to support the authorization of CHR/I/ADEL 280 SC (ADEL 280 SC/ PYRIFOS ADE 280 SC) INNVIGO is allowed to refer to EU approved reports

In the following document, data for active substance deltamethrin was described during its inclusion on Annex 1 process in 2009. Were reference to active substance data in the current risk assessment has been made, it was based on the data presented by Bayer (AgroEvo).
In November 30th, 2009r Decis 2.5 EC product has been authorized in Poland thus according to the art. 59 reg. 1107/2009, data protection for mentioned data expired 10 years from date of first authorization of product containing that active substance (in this case December, 1st 2019).

8.1 Critical GAP and overall conclusions

Table 8.1-1: Critical use pattern of the formulated product

1	2	3	4	5	6	7	8	9	15	11	12	13	14	15
Use - No. (e)	**Member state(s)**	**Crop and/ or situation** (crop destination / purpose of crop)	**F, Fn, Fpn G, Gn, Gpn or I**	**Pests or Group of pests controlled** (additionally: developmental stages of the pest or pest group)	**Application**				**Application rate**			**PHI** (days)	**Remarks:** e.g. g safener/synergist per ha (f)	ZRMs Conclusion Grounwater
					Method / Kind	Timing / Growth stage of crop & season	Max. number a) per use b) per crop/ season	Min. interval between applications (days)	kg or L product / ha a) max. rate per appl. b) max. total rate per crop/season	g or kg as/ha a) max. rate per appl. b) max. total rate per crop/season	Water L/ha min / max			
Zonal uses (field or outdoor uses, certain types of protected crops)														
1	PL	Winter Oilseed rape (BRSNW)	F	*Aphids: Brevicoryne brassicae, Myzus persicae, Athalia/Athalia rosae*	Spray, medium sprayer	Autumn BBCH 10-21	a)1 b)1	n/a	a) 0.16 L/ha b) 0.16 L/ha	a) (0.04 kg a.s/ha A+0.0048 kg a.s/ha D) b) (0.04 kg a.s/ha A+0.0048 kg a.s/ha D)	200-300	n/a		

1	2	3	4	5	6	7	8	9	15	11	12	13	14	15
Use - No. (e)	**Member state(s)**	**Crop and/ or situation** **(crop destination / purpose of crop)**	**F, Fn, Fpn G, Gn, Gpn or I**	**Pests or Group of pests controlled** (additionally: developmental stages of the pest or pest group)	**Application**				**Application rate**			**PHI** (days)	**Remarks:** e.g. g safener/synergist per ha (f)	ZRMs Conclusion Grounwater
					Method / Kind	Timing / Growth stage of crop & season	Max. number a) per use b) per crop/ season	Min. interval between applications (days)	kg or L product / ha a) max. rate per appl. b) max. total rate per crop/season	g or kg as/ha a) max. rate per appl. b) max. total rate per crop/season	Water L/ha min / max			
2	PL	Winter Oilseed rape (BRSNW)	F	*Ceutorhynchus quadridens*, syn. *C. pallidactylus, Ceutorhynchus napi, Brassicogethes aeneus* syn. *Meligethes aeneus, Ceutorhynchus assimilis, Dasineura brassicae*	Spray, medium sprayer	Spring BBCH 30-70	a)1 b)1	n/a	a) 0.16 L/ha b) 0.16 L/ha	a) (0.04 kg a.s/ha A+0.0048 kg a.s/ha D) b) (0.04 kg a.s/ha A+0.0048 kg a.s/ha D)	200-300	n/a		
3	PL	Winter wheat (TRZAW)	F	*Sitobion avenae, Thrips* sp.	Spray, medium sprayer	Spring BBCH 37-75	a)1 b)1	n/a	a) 0.16 L/ha b) 0.16 L/ha	a) (0.04 kg a.s/ha A+0.0048 kg a.s/ha D) b) (0.04 kg a.s/ha A+0.0048 kg a.s/ha D)	200-300	n/a		

1	2	3	4	5	6	7	8	9	15	11	12	13	14	15
Use - No. (e)	**Member state(s)**	**Crop and/ or situation** **(crop destination / purpose of crop)**	**F, Fn, Fpn G, Gn, Gpn or I**	**Pests or Group of pests controlled** (additionally: developmental stages of the pest or pest group)	**Application**				**Application rate**			**PHI** (days)	**Remarks:** e.g. g safener/synergist per ha (f)	ZRMs Conclusion Grounwater
					Method / Kind	Timing / Growth stage of crop & season	Max. number a) per use b) per crop/ season	Min. interval between applications (days)	kg or L product / ha a) max. rate per appl. b) max. total rate per crop/season	g or kg as/ha a) max. rate per appl. b) max. total rate per crop/season	Water L/ha min / max			
4	PL	Winter triticale (TTLWI)	F	*Sitobion avenae, Thrips* sp.	Spray, medium sprayer	Spring BBCH 37-75	a)1 b)1	n/a	a) 0.16 L/ha b) 0.16 L/ha	a) (0.04 kg a.s/ha A+0.0048 kg a.s/ha D) b) (0.04 kg a.s/ha A+0.0048 kg a.s/ha D)	200-300	n/a		
5	PL	Sugar beet (BEAVA)	F	*Aphis* sp.: *Aphis fabae, Pegomya hyoscyami*	Spray, medium sprayer	Spring BBCH 12-19	a)1 b)1	n/a	a) 0.16 L/ha b) 0.16 L/ha	a) (0.04 kg a.s/ha A+0.0048 kg a.s/ha D) b) (0.04 kg a.s/ha A+0.0048 kg a.s/ha D)	200-300	n/a		Central Zone PL
Interzonal uses (use as seed treatment, in greenhouses (or other closed places of plant production), as post-harvest treatment or for treatment of empty storage rooms)														

1	2	3	4	5	6	7	8	9	15	11	12	13	14	15
Use - No. (e)	**Member state(s)**	**Crop and/ or situation** **(crop destination / purpose of crop)**	**F, Fn, Fpn G, Gn, Gpn or I**	**Pests or Group of pests controlled** (additionally: developmental stages of the pest or pest group)	**Application**				**Application rate**			**PHI** (days)	**Remarks:** e.g. g safener/synergist per ha (f)	ZRMs Conclusion Grounwater
					Method / Kind	Timing / Growth stage of crop & season	Max. number a) per use b) per crop/ season	Min. interval between applications (days)	kg or L product / ha a) max. rate per appl. b) max. total rate per crop/season	g or kg as/ha a) max. rate per appl. b) max. total rate per crop/season	Water L/ha min / max			
7														
8														
Minor uses according to Article 51 (zonal uses)														
9														
10														
Minor uses according to Article 51 (interzonal uses)														
11														
12														

* Use number(s) in accordance with the list of all intended GAPs in Part B, Section 0 should be given in column 1
** F: professional field use, Fn: non-professional field use, Fpn: professional and non-professional field use, G: professional greenhouse use, Gn: non-professional greenhouse use, Gpn: professional and non-professional greenhouse use, I: indoor application

Explanation for column 15 "Conclusion"

A	Safe use
R	Further refinement and/or risk mitigation measures required
C	To be confirmed by cMS
N	No safe use

Comments of zRMS:	The safe use of annual application of Adel 280 SC was confirmed for all crops if EU agreed endpoints of PUF was used.

	In accordance with national requirements (use of PUF = 0 for active substance and all its metabolites) the safe use for annual application of Adel 280 SC in winter OSR and winter cereals was confirmed. For sugar beets – every other year application of Adel 280 SC is required

Table 8.1-2: Assessed (critical) uses during approval of Acetamiprid concerning the Section Environmental Fate (EFSA Journal 2016;14(11):4610)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Use-No. *	Member state(s)	Crop and/or situation (crop destination / purpose of crop)	F, Fn, Fpn G, Gn, Gpn or I **	Pests or Group of pests controlled (additionally: developmental stages of the pest or pest group)	**Application**				**Application rate**			PHI (days)	Remarks: e.g. g safener/ synergist per ha
					Method / Kind	Timing / Growth stage of crop & season	Max. number a) per use b) per crop/ season	Min. interval between applications (days)	kg product/ha a) max. rate per appl. b) max. total rate per crop/season	kg as/ha a) max. rate per appl. b) max. total rate per crop/season	Water L/ha min/max		
1	EU	Tomato	G	Aphids	Foliar	BBCH 61 – 89 (January-December)	a) 2 b) 2	a) 7 b) 7	a) 0.5 b) 1.0	a) 0.100 b) 0.200	300 – 1500	3	Use in greenhouse is in permanent structure
2	EU	Pome fruit	F	Aphids	Foliar	BBCH 77 – 87 (June - September)	a) 2 b) 2	a) 14 b) 14	a) 0.375 b) 0.750	a) 0.075 b) 0.150	300 – 1000	14	
3	EU	Potato	F	Colorado potato beetle / aphids	Foliar	BBCH 45 – 93 (May-October)	a) 3 b) 3	a) 7 b) 7	a) 0.250 b) 0.750	a) 0.05 b) 0.150	400 – 600	7	

* Use number(s) in accordance with the list of all intended GAPs in Part B, Section 0 should be given in column 1
** F: professional field use, Fn: non-professional field use, Fpn: professional and non-professional field use, G: professional greenhouse use, Gn: non-professional greenhouse use, Gpn: professional and non-professional greenhouse use, I: indoor application

Table 8.1-3: Assessed (critical) uses during approval of Deltamethrin concerning the Section Environmental Fate

Accoridng to SANCO/6504/VI/99-final 17 October 2002 critical GAP for deltamethrin was not submitted.

8.2 Metabolites considered in the assessment

Table 8.2-1: Metabolites of acetamiprid potentially relevant for exposure assessment

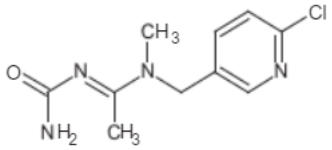
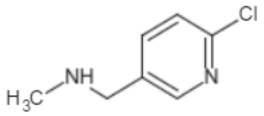
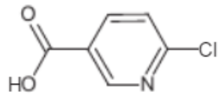
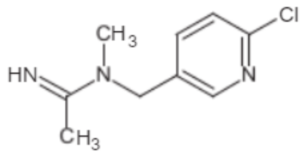
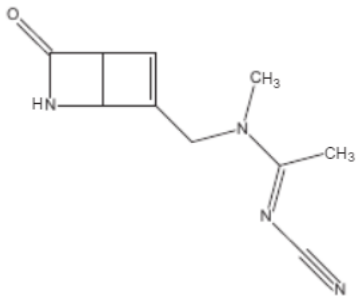
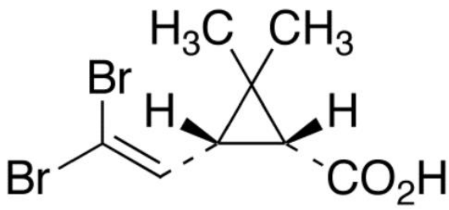
Metabolite	Molar mass	Chemical structure	Maximum observed occurence in compartements	Exposue assessment required due to
IM-1-2	240.49		Soil: 55% Water and Sediment Total system: 13.4%	PEC_{gw} PEC_{soil} $PEC_{sw/sed}$:
IM-1-4	155.88		Soil: 72% Water and Sediment Total system: 81.5%	PEC_{gw} PEC_{soil} $PEC_{sw/sed}$
IC-0	155.88		Soil: 11.3% Water and Sediment Total system: 29.5%	PEC_{gw} PEC_{soil} $PEC_{sw/sed}$
IM-1-5	198.19		Soil: 20% Water and Sediment Total system: 0.0001	PEC_{gw} PEC_{soil} $PEC_{sw/sed}$
IB-1-1	204.23		Soil: 0.0001 Water and Sediment Total system: 35%	$PEC_{sw/sed}$

Table 8.2-2: Metabolites of deltamethrin potentially relevant for exposure assessment

Metabolite	Molar mass	Chemical structure	Maximum observed occurence in compartements	Exposue assessment required due to
Br_2CA	297.97		Soil: 23% Water and Sediment Total system: 13%	PEC_{gw} PEC_{soil} $PEC_{sw/sed}$

8.3 Rate of degradation in soil (KCP 9.1.1)

Studies on degradation in soil with the formulation were not performed, since it is possible to extrapolate from data obtained with the active substance.

8.3.1 Aerobic degradation in soil (KCP 9.1.1.1)

8.3.1.1 Acetamiprid and its metabolites

Table 8.3-1: Summary of aerobic degradation rates for Acetamiprid - laboratory studies (EFSA Journal 2016;14(11):4610)

Trigger endpoint

Parent	**Dark aerobic conditions**						
Soil type	***X7***	**pH[a)]**	**t. °C / % MWHC**	**DT_{50} / DT_{90} (d)**	**Parameters bi-phasic models**	**St. (χ^2)**	**Method of calculation**
Collombey loamy sand, Morgenroth, 1997		7.6	20/50% pF2.5	1.4 / 4.7		7.7	SFO
Clay loam Burr, 1997		7.4	20/45% MWHC	5.4 / 54.5	k1:0.00806 k2:0.1628 g: 0.155	6.9	DFOP
Clay loam 10°C Burr, 1997		7.4	10/45% MWHC	7.9 / 49.3	k1:0.1057 k2:0.0065 g: 0.8686	3.7	DFOP
Sandy loam, Burr 1997		5.6	20/45% MWHC	2.5 / 14.3	α:1.744 β:5.212	4.6	FOMC
Silty Clay loam Burr, 1997		7.9-8.5	20/45% MWHC	0.8 / 2.8		9.5	SFO
Sandy loam Simmonds 2002		8.0	20/45% MWHC	1.1 / 5.2	α:2.278 β:3.000	8.4	FOMC
Clay Simmonds 2002		7.7	20/45% MWHC	1.1 / 3.8		9.3	SFO
Clay loam Simmonds 2002		7.9	20/45% MWHC	1 / 3.3		8.4	SFO

[a)] Measured in water

Modelling endpoints

Parent	**Dark aerobic conditions**						
Soil type	***X6***	**pH[a)]**	**t. °C / % MWHC**	**DT_{50} / DT_{90} (d)**	**DT_{50} (d) 20 °C pF2/10kPa[b)]**	**St. (χ^2)**	**Method of calculation**
Collombey loamy sand, Morgenroth, 1997		7.6	20/50% pF2.5	1.4 / 4.7	1.2	7.7	SFO
Clay loam Burr, 1997		7.4	20/45% MWHC	4.7 / 15.8	4.7	11.8	SFO
Sandy loam, Burr 1997		5.6	20/45% MWHC	2.5 / 8.3	2.5	8.8	SFO
Silty Clay loam Burr, 1997		7.9-8.5	20/45% MWHC	0.8 / 2.8	0.8	9.5	SFO
Sandy loam Simmonds 2002		8.0	20/45% MWHC	1.1 / 3.7	1.1	9.9	SFO
Clay Simmonds 2002		7.7	20/45% MWHC	1.1 / 3.8	1.1	9.7	SFO
Clay loam Simmonds 2002		7.9	20/45% MWHC	1 / 3.2	1	8.6	SFO
Geometric mean (if not pH dependent)					1.45		
pH dependence, *No*							

[a)] Measured in water
[b)] Normalised using a Q10 of 2.58 and Walker equation coefficient of 0.7

Table 8.3-2: Summary of aerobic degradation rates for IM-1-2 - laboratory studies (EFSA Journal 2016;14(11):4610)

Trigger endpoint

IM-1-2	Dark aerobic conditions Metabolite dosed or the precursor from which the f.f. was derived was acetamiprid						
Soil type	X^2	**pH[a)]**	**t. °C / % MWHC**	**DT_{50}/ DT_{90} (d)**	**Parameters bi-phasic models**	**St. (χ^2)**	**Method of calculation**
Sandy loam Simmonds 2002		8.0	20/45% MWHC	1.9 / 6.3		9.6	SFO[b]
Clay Simmonds 2002		7.7	20/45% MWHC	1.9 / 6.3		13.0	SFO
Clay loam Simmonds 2002		7.9	20/45% MWHC	1.6 / 5.3		12.3	SFO

[a)] Measured in water
[b)] Parent fitted with FOMC model

Modelling endpoint

IM-1-2	Dark aerobic conditions Metabolite dosed or the precursor from which the f.f. was derived was acetamiprid							
Soil type	X^2	**pH[a)]**	**t. °C / % MWHC**	**DT_{50}/ DT_{90} (d)**	**f. f. k_f / k_{dp}**	**DT_{50} (d) 20 °C pF2/10kPa [b)]**	**St. (χ^2)**	**Method of calculation**
Sandy loam Simmonds 2002		8.0	20/45% MWHC	1.6 / 5.3	0.97	1.6	12.3	SFO
Clay Simmonds 2002		7.7	20/45% MWHC	1.9 / 6.3	0.68	1.9	13.0	SFO
Clay loam Simmonds 2002		7.9	20/45% MWHC	1.6 / 5.3	0.66	1.6	12.3	SFO
Geometric mean (if not pH dependent)						1.7		
Arithmetic mean					0.77			
pH dependence, *No*								

[a)] Measured in water
[b)] Normalised using a Q10 of 2.58 and Walker equation coefficient of 0.7

Table 8.3-3: Summary of aerobic degradation rates for IM-1-4 - laboratory studies (EFSA Journal 2016;14(11):4610)

Trigger endpoint:

IM-1-4	Dark aerobic conditions Metabolite dosed or the precursor from which the f.f. was derived was IM-1-2						
Soil type	X^2	**pH[a)]**	**t. °C / % MWHC**	**DT_{50}/ DT_{90} (d)**	**Parameters bi-phasic models**	**St. (χ^2)**	**Method of calculation**
Collombey loamy sand, Morgenroth, 1997		7.6	20/50% pF2.5	46.2 / 154		22.8	SFO
Clay loam Burr, 1997		7.4	20/45% MWHC	142 / 473		8.7	SFO[a]
Clay loam 10°C Burr, 1997		7.4	10/45% MWHC	171 / 569		5.3	SFO[a]
Sandy loam, Burr 1997		5.6	20/45% MWHC	146 / 483		6.2	SFO[b]
Silty Clay loam Burr, 1997		7.9-8.5	20/45% MWHC	3.7 / 12.3		9.1	SFO
Sandy loam Simmonds 2002		8.0	20/45% MWHC	4.2 / 14		22	SFO[b]
Clay Simmonds 2002		7.7	20/45% MWHC	2.3 / 7.8		18.1	SFO
Clay loam Simmonds 2002		7.9	20/45% MWHC	3 / 10		14.9	SFO

[a)] Parent kinetics DFOP
[b)] Parent kinetics FOMC

Modeling endpoint:

IM-1-4	Dark aerobic conditions Metabolite dosed or the precursor from which the f.f. was derived was IM-1-2							
Soil type	X^7	**pH[a)]**	**t. °C / % MWHC**	**DT_{50}/ DT_{90} (d)**	**f. f. k_f / k_{dp}**	**DT_{50} (d) 20 °C pF2/10kPa [b)]**	**St. (χ^2)**	**Method of calculation**
Collombey loamy sand, Morgenroth, 1997		7.6	20/50% pF2.5	46.2 / 154	0.56	40.0	22.8	SFO
Clay loam Burr, 1997		7.4	20/45% MWHC	169 / 560	0.61	169	10.5	SFO
Sandy loam, Burr 1997		5.6	20/45% MWHC	166 / 552.8	0.75	166	6.7	SFO
Silty Clay loam Burr, 1997		7.9-8.5	20/45% MWHC	3.7 / 12.3	1	3.7	9.1	SFO
Sandy loam Simmonds 2002		8.0	20/45% MWHC	4.8 / 16.1	0.44	4.8	22.3	SFO
Clay Simmonds 2002		7.7	20/45% MWHC	2.3 / 7.8	0.97	2.3	18.1	SFO
Clay loam Simmonds 2002		7.9	20/45% MWHC	3 / 10	0.71	3.0	14.9	SFO
Geometric mean (if not pH dependent)						14.6		
Arithmetic mean					0.72			
pH dependence, *No*								

[a)] Measured in water
[b)] Normalised using a Q10 of 2.58 and Walker equation coefficient of 0.7

Table 8.3-4: Summary of aerobic degradation rates for IC-0 - laboratory studies (EFSA Journal 2016;14(11):4610)

Trigger endpoint:

IC-0	Dark aerobic conditions Metabolite dosed or the precursor from which the f.f. was derived was IM-1-4						
Soil type	X^7	**pH[a)]**	**t. °C / % MWHC**	**DT_{50}/ DT_{90} (d)**	**Parameters bi-phasic models**	**St. (χ^2)**	**Method of calculation**
Silty Clay loam Burr, 1997		7.9-8.5	20/45% MWHC	3.6 / 11.8		32.6	SFO
Sandy loam Simmonds 2002		8.0	20/45% MWHC	1.2 / 4.1		4.3	SFO[b]
Clay Simmonds 2002		7.7	20/45% MWHC	2.7 / 8.9		11.6	SFO
Clay loam Simmonds 2002		7.9	20/45% MWHC	1.8 / 6.0		10.0	SFO
Sandy loam Lowden, 1997		6.7	20/45% MWHC	3.1 / 10.1		10	SFO
Silty Clay loam Lowden, 1997		7.8	20/45% MWHC	2.4 / 8.0		9.1	SFO
Clay loam Lowden, 1997		7.2	20/45% MWHC	5.6 / 18.5		9.8	SFO

[a)] Measured in water
[b)] Parent kinetics FOMC

Modeling endpoint:

IC-0	Dark aerobic conditions Metabolite dosed or the precursor from which the f.f. was derived was IM-1-4							
Soil type	**X7**	**pH[a)]**	**t. °C / % MWHC**	**DT_{50}/ DT_{90} (d)**	**f. f. k_f / k_{dp}**	**DT_{50} (d) 20 °C pF2/10kPa [b)]**	**St. (χ^2)**	**Method of calculation**
Silty Clay loam Burr, 1997		7.9-8.5	20/45% MWHC	3.6 / 11.8	0.3	3.6	32.6	SFO
Sandy loam Simmonds 2002		8.0	20/45% MWHC	1.4 / 4.6	1	1.4	5.1	SFO
Clay Simmonds 2002		7.7	20/45% MWHC	2.7 / 8.9	0.39	2.7	11.6	SFO
Clay loam Simmonds 2002		7.9	20/45% MWHC	1.8 / 6.0	1	1.8	11.9	SFO
Sandy loam Lowden, 1997		6.7	20/45% MWHC	3.1 / 10.1	-*	3.1	10	SFO
Silty Clay loam Lowden, 1997		7.8	20/45% MWHC	2.4 / 8.0	-*	2.4	9.1	SFO
Clay loam Lowden, 1997		7.2	20/45% MWHC	5.6 / 18.5	-*	5.6	9.8	SFO
Geometric mean (if not pH dependent)						2.7		
Arithmetic mean					0.67			
pH dependence, *No*								

[a)] Measured in water
[b)] Normalised using a Q10 of 2.58 and Walker equation coefficient of 0.7

Table 8.3-5: **Summary of aerobic degradation rates for IM-1-5 - laboratory studies (EFSA Journal 2016;14(11):4610)**

Trigger endpoints:

IM-1-5	Dark aerobic conditions Metabolite dosed or the precursor from which the f.f. was derived was acetamiprid						
Soil type	**X7**	**pH[a)]**	**t. °C / % MWHC**	**DT_{50}/ DT_{90} (d)**	**Parameters bi-phasic models**	**St. (χ^2)**	**Method of calculation**
Silty Clay loam Burr, 1997		7.9-8.5	20/45% MWHC	319 / 1059		5.1	SFO
Sandy loam Simmonds 2002		8.0	20/45% MWHC	-		-	SFO
Clay Simmonds 2002		7.7	20/45% MWHC	-		-	SFO
Clay loam Simmonds 2002		7.9	20/45% MWHC	486 / 1614		10.3	SFO
Loam (France) Jewkes 2014		7.5	78.4% pF2 moisture	663/2203		4.7	SFO
Loam (Hungary) Jewkes 2014		7.8	60.7% pF2 moisture	420/1395		3.5	SFO
Sandy Clay Loam Jewkes 2014		7.6	66.4% pF2 moisture	378/1254		2.8	SFO

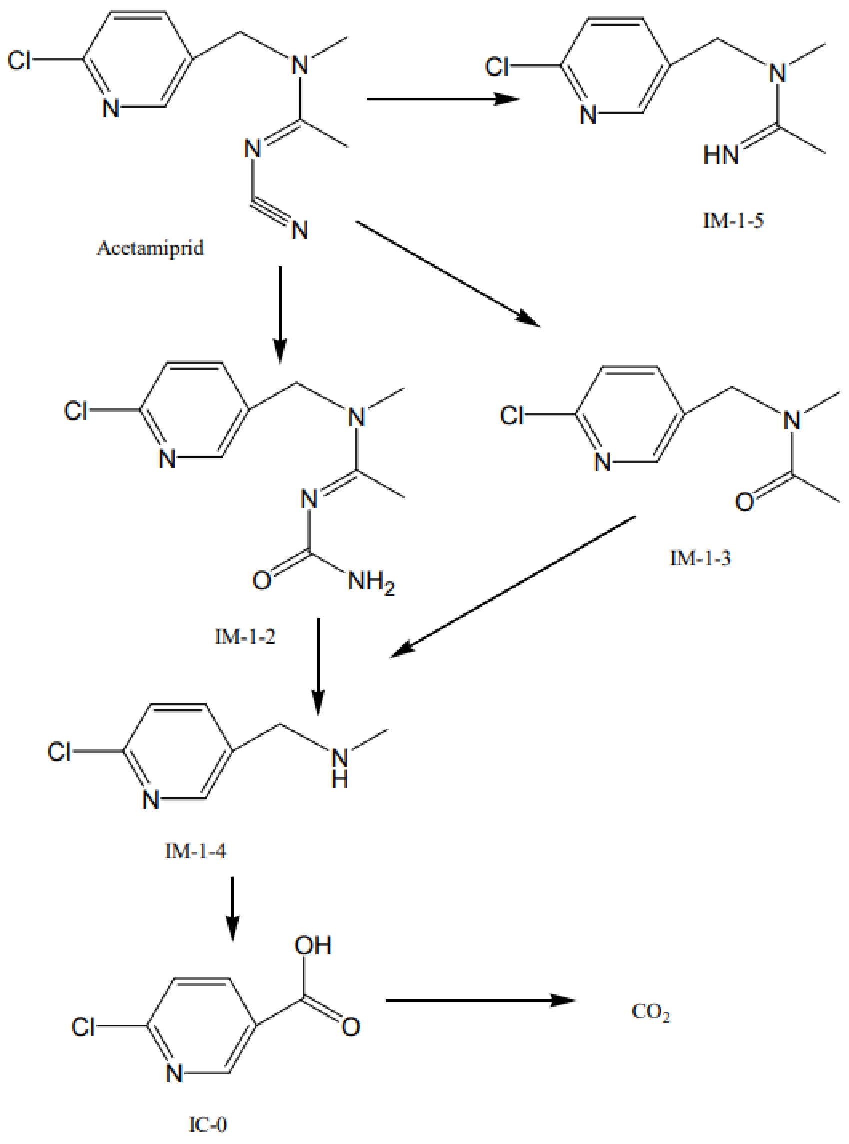
[a)] Measured in water

Modeling endpoints:

IM-1-5	Dark aerobic conditions Metabolite dosed or the precursor from which the f.f. was derived was acetamiprid							
Soil type	X^2	**pH[a)]**	**t. °C / % MWHC**	**DT_{50}/ DT_{90} (d)**	**f. f. k_f / k_{dp}**	**DT_{50} (d) 20 °C pF2/10kPa [b)]**	**St. (χ^2)**	**Method of calculation**
Silty Clay loam Burr, 1997		7.9-8.5	20/45% MWHC	319 / 1059	0.21	319	5.1	SFO
Sandy loam Simmonds 2002		8.0	20/45% MWHC	-	0.16[c)]	1000[d)]	-	SFO
Clay Simmonds 2002		7.7	20/45% MWHC	-	0.12[c)]	1000[d)]	-	SFO
Clay loam Simmonds 2002		7.9	20/45% MWHC	486 / 1614	0.12	486	10.3	SFO
Loam (France) Jewkes 2014		7.5	78.4% pF2 moisture	663/2203	-	559	4.7	SFO
Loam (Hungary) Jewkes 2014		7.8	60.7% pF2 moisture	420/1395	-	296	3.5	SFO
Sandy Clay Loam Jewkes 2014		7.6	66.4% pF2 moisture	378/1254	-	284	2.8	SFO
Geometric mean (if not pH dependent)						495		
Arithmetic mean					0.15			
pH dependence, *No*								

[a)] Measured in water
[b)] Normalised using a Q10 of 2.58 and Walker equation coefficient of 0.7
[c)] formation fraction based on maximum fraction of occurrence (persistent metabolite)
[d)] default DT50 value used as no decline of IM-1-5 was observed for this soil

Proposed metabolic pathway of acetamiprid under aerobic conditions



8.3.1.2 Deltamethrin and its metabolites

Table 8.3-3: Summary of aerobic degradation rates for deltamethrin and Br_2CA-laboratory studies

Summary of laboratory studies on degradation of deltamethrin in soil.

Study/soil	Conditions	DT_{50}, days[1]	DT_{90}, days[2]	CO_2, % of applied ^{14}C (after days)	Unextractable, % of applied ^{14}C (after days)
Wang, 1991a:					
Sandy loam	aerobic 25°C	22-26	72-85	25-45 (59) 50-61 (181)	22-44 (59) 15-44 (181)
Kaufman et al, 1979a:					
Fine sandy loam	aerobic 25°C	30-34	98-112	43-54 (64) 52-62 (128)	18-32 (64) 17-31 (128)
Silt loam	”	30-35	100-117	44-57 (64) 58-69 (128)	16-22 (64) 10-24 (128)
Kaufman et al, 1979b:					
Fine sandy loam	aerobic 10°C	35-55	117-183	13-32 (64)	14-21 (64)
”	aerobic 25°C	20-25	66-82	60-62 (64)	20-21 (64)
”	aerobic 40°C	31	102-103	31-54 (64)	14-25 (64)
Wang and Reynolds, 1991a:					
Sandy loam	photolysis	9	-	≤2.5 (30)	35 (30)
	dark control	≤14 (estimated)		0.6 (30)	25 (30)

1 DT_{50} estimations based on assumption of first order kinetics. Coefficient of determination, r^2, was 0.85-0.99.
2 Predicted DT_{90} from first order rate constants.

Route of degradation

Aerobic:

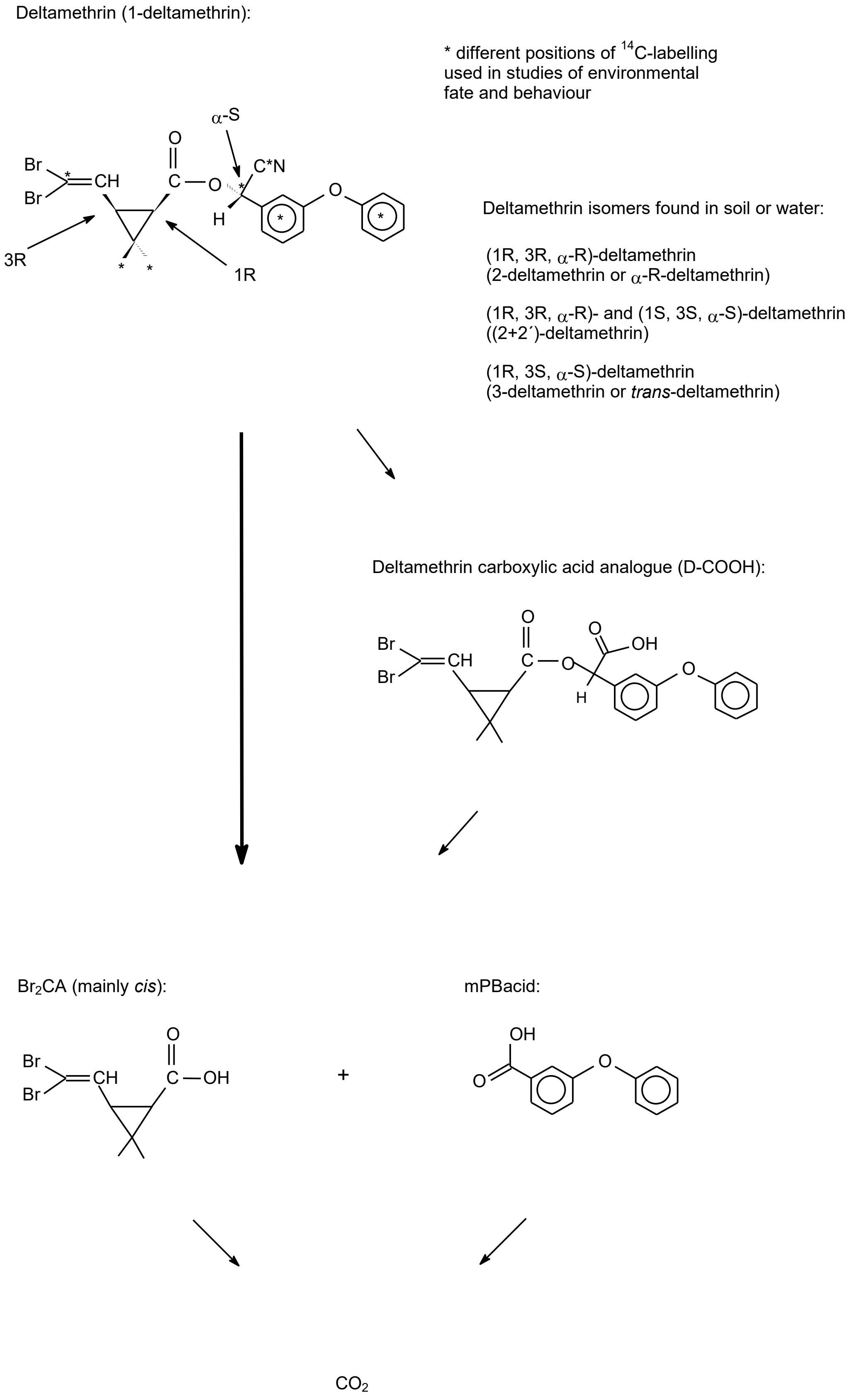
Mineralization after 100 days:	90 d: 52% (benzyl-^{14}C), 36 % (gem-^{14}C) 123/128 d: 62-69% (cyano-^{14}C), 52-58% (phenoxy-^{14}C) 64 d: 62% (cyano-^{14}C), 60 % (vinyl-^{14}C) 64 days: 50-70% (vinyl-^{14}C), 61-65% (benzyl-^{14}C)
Non-extractable residues after 100 days:	90 d: 18% (benzyl-^{14}C), 48% (gem-^{14}C) 123/128 d: 10-17% (cyano-^{14}C), 24-31% (phenoxy-^{14}C) 64 d: 20% (cyano-^{14}C), 21% (vinyl-^{14}C) 64 days: 14-18% (vinyl-^{14}C), 18-26% (benzyl-^{14}C)
Major metabolites above 10 % of applied active substance: name and/or code % of applied rate (range and maximum)	Br_2CA[1]: max 23% (14 d), n.d. day 120

Rate of degradation

Laboratory studies

DT_{50}lab (20 °C, aerobic):	25 °C, first order kinetics: 18, 20, 22, 23, 25, 25, 26, 28, 30, 30, 34, 35 days; mean 26 d (n=12) (r^2 0.77-0.99) Br_2CA: 0.7, 0.7, 0.8, 1.1, 1.6, 1.9, 9.1 days mean 2.3 d (n=7) (r^2 0.60-0.99, intrinsic degradation rate of Br_2CA alone, calculated by compartmental analysis from studies on deltamethrin) 21 d (r^2 0.95, 4 sampling points, 1 soil, estimated from study on deltamethrin)
DT_{90}lab (20 °C, aerobic):	25 °C, first order kinetics: 58, 66, 72, 76, 82, 82, 85, 92, 98, 100, 112, 117 days mean 87 d (n=12)
DT_{50}lab (10 °C, aerobic):	35, 55 days (r^2 0.96, 0.98) (n=2) first order kinetics
DT_{50}lab (20 °C, anaerobic):	25 °C first order kinetics: 32, 36, 69, 100, 105 days (r^2 0.85-0.96) mean 68 d (n=5)

Route of degradation of deltamethrin in soil and water, showing main degradation products only. Arrow in bold indicates the main route of degradation of deltamethrin, by ester cleavage.



8.3.2 Anaerobic degradation in soil (KCP 9.1.1.1)

Table 8.3-6: Summary of anaerobic degradation rates for Acetamiprid-laboratory studies (EFSA Journal 2016;14(11):4610)

Parent	Dark anaerobic conditions						
Soil type	X[1]	pHa)	t. oC / % MWHC	DT50 / DT90 (d)	DT50 (d) 20 °Cb)	St. (χ2)	Method of calculation
Loam		7.4	20 / 100% MWHC	69.0 / 410.6		4.7	FOMC α:1.591 β:126.319

[a] Measured in water
[b] Normalised using a Q10 of 2.58

Parameter	Anaerobic soil
Model	*SFO*
χ^2 error (%)	4.906
k (d^{-1})*	9.649 $\times 10^{-3}$ (8.41$\times 10^{-9}$)
DT50 (d)	71.838
DT90 (d)	238.64
Model	*FOMC*
χ^2 error (%)	4.694
α	1.591
β	126.319
DT50 (d)	68.956
DT90 (d)	410.59
Model	*DFOP*
χ^2 error (%)	4.818
k1*	1.689 $\times 10^{-2}$ (0.0445)
k2*	2.920 $\times 10^{-8}$ (0.5)
g	7.415 $\times 10^{-1}$
DT_{50} (day)	66.40
DT_{90} (day)	-

*p-value from the t-test is given in brackets

Proposed metabolic pathway of acetamiprid under anaerobic conditions

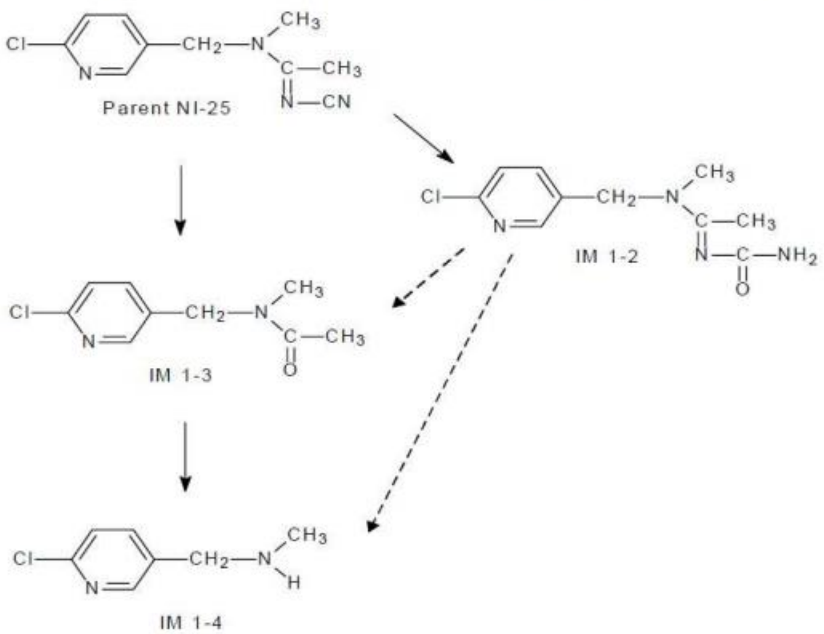


Table 8.3-7: Summary of anaerobic degradation rates for Deltamethrin laboratory studies

Study/soil	Conditions	DT_{50}, days[1]	DT_{90}, days[2]	CO_2, % of applied ^{14}C (after days)	Unextractable, % of applied ^{14}C (after days)
Wang, 1991b: Sandy loam	(aerobic +) anaerobic 25°C	32-36	106-119	9-63 (59) 13-71 (90)	18-20 (59) 17-18 (90)
Kaufman et al, 1980: Fine sandy loam	anaerobic 25°C	69-105	229-349	7-21 (64)	10-26 (64)
”	(aerobic+) anaerobic 25°C	-	-	29-50(32+64)	12-33 (32+64)
”	aerobic 25°C	-	-	26-53 (96)	15-28 (96)

1 DT_{50} estimations based on assumption of first order kinetics. Coefficient of determination, r^2, was 0.85-0.99.
2 Predicted DT_{90} from first order rate constants.

8.4 Field studies (KCP 9.1.1.2)

8.4.1 Soil dissipation testing on a range of representative soils (KCP 9.1.1.2.1)

8.4.1.1 Acetamiprid and its metabolites (EFSA Journal 2016;14(11):4610)

Parent	Aerobic conditions								
Soil type (indicate if bare or cropped soil was used).	**Location (country or USA state).**	X^9	**pH**	**Depth (cm)**	**DT_{50} (d) actual**	**DT_{90}(d) actual**	**St. (χ^2)**	**DT_{50} (d) Norm[c].**	**Method of calculation**
Clay loam Wicks 1999	Italy		8.9 [a)]	0 – 30	0.4	19.8	14.1		DFOP k1:4.122808 k2:0.071185 g: 0.589717
Sandy loam Wicks 1999	United Kingdom		5.9 [a)]	0 – 30	3.7	22.7	19.5		FOMC α:1.544681 β:6.600352
Silty clay loam Wicks 1999	France		8.7 [a)]	0 – 30	9.6	31.3	16.4		SFO
Sandy loam Wicks 1999	Spain		7 [a)]	0 – 30	0.7	11.2	11.4		FOMC α:0.67159 β:0.374289
Loam Kellner 2012a	Spain		7.45 [b)]	0 - 50	12.96	43.06	28.1		SFO
Loam Kellner 2012b	Southern France		7.36 [b)]	0 – 50	2.26	7.52	13.0		SFO
Loam Kellner 2012c	Northern France		7.49 [b)]	0 – 50	2.24	7.43	12.1		SFO
Loam Finger 2013	Hungary		8.06 [b)]	0 - 50	2.14	15.32	25.9		FOMC α: and β:values not reported
pH dependence, No									

[a)] Measured in 1 M KCl
[b)] Measured in 0.01 M CaCl
[c)] Normalised using a Q10 of 2.58 and Walker equation coefficient of 0.7

Metabolite formation	**Aerobic conditions, metabolite max. formation proportion of maximum measured parent.**						
Soil type (indicate if bare or cropped soil was used).	**Location (country or USA state).**	**X[10]**	**pH**	**Depth (cm)**	**IM-1-4**	**IM-1-2**	**IM-1-5**
Clay loam Wicks 1999	Italy		8.9 [a)]	0 – 10	50% after 28d	39% after 4d	Not analysed
Sandy loam Wicks 1999	United Kingdom		5.9 [a)]	0 – 10	50% after 30d	< 3.9% after 2-7d	Not analysed
Silty clay loam Wicks 1999	France		8.7 [a)]	0 – 10	73% after 28d	18% after 2d	Not analysed
Sandy loam Wicks 1999	Spain		7 [a)]	0 – 10	55% after 31d	9% after 2d	Not analysed
Loam Kellner 2012a	Spain		7.45 [b)]	0 - 10	Not analysed	Not analysed	60% after 28d
Loam Kellner 2012b	Southern France		7.36 [b)]	0 – 10	Not analysed	Not analysed	25% after 29d
Loam Kellner 2012c	Northern France		7.49 [b)]	0 – 10	Not analysed	Not analysed	45% after 7d
Loam Finger 2013	Hungary		8.06 [b)]	0 - 10	Not analysed	Not analysed	24% after 169d

[a)] Measured in 1 M KCl
[b)] Measured in 0.01 M CaCl

8.4.2 Soil accumulation testing (KCP 9.1.1.2.2)

Studies Not required – plateau concentration of persistent metabolites obtained by modelling

8.5 Mobility in soil (KCP 9.1.2)

Studies on mobility in soil with the formulation were not performed, since it is possible to extrapolate from data obtained with the active substance.

8.5.1 Acetamiprid and its metabolites (EFSA Journal 2016;14(11):4610)

Table 8.5-1: Summary of soil adsorption/desorption for acetamiprid

Parent								
Soil Type		**OC %**	**Soil pH[a)]**	**K_d (mL/g)**	**K_{doc} (mL/g)**	**K_F (mL/g)**	**K_{Foc} (mL/g)**	**1/n**
I	Sand	0.43	5.7			0.60	138.39	0.842
II	Loamy sand	1.04	7.6			1.35	129.98	0.825
III	Sandy loam	1.57	7.1			1.12	71.09	0.893
IV	Silt loam	1.39	7.7			1.69	121.81	0.835
V	Silt loam	4.39	7.1			3.13	71.38	0.907
Arithmetic mean (if not pH dependent)							106.5	0.860
pH dependence, No								

[a)] Measured in unknown medium

Table 8.5-2: Summary of soil adsorption/desorption for IM-1-2

IM-1-2							
Soil Type	**OC %**	**Soil pHa)**	**Kd (mL/g)**	**Kdoc (mL/g)**	**KF (mL/g)**	**KFoc (mL/g)**	**1/n**
Clay Loam 02/06	2.3	7.6			0.45	19	0.886
Sandy Loam 02/16	1.3	7.5			0.27	21	0.856
Clay Loam 01/24	3.8	6.1			3.60	95	0.927
Sandy Loam 02/18	0.2	7.4			0.16	80	0.944
Arithmetic mean (if not pH dependent)						54	0.903
pH dependence, No							

[a)] Measured in $CaCl_2$ medium

Table 8.5-3: Summary of soil adsorption/desorption for IM-1-4

IM-1-4								
Soil Type		**OC %**	**Soil pH[a)]**	**K_d (mL/g)**	**K_{doc} (mL/g)**	**K_F (mL/g)**	**K_{Foc} (mL/g)**	**1/n**
I	Sand*	0.43	5.7			2.1	488	0.597
II	Loamy sand	1	7.6			2.24	223	0.714
III	Sandy loam	1.57	7.1			2.16	138	0.712
IV	Silt loam	1.39	7.7			2.67	192	0.816
V	Silt loam	4.39	7.1			5.79	132	0.813
Arithmetic mean (if not pH dependent)							171	0.764
pH dependence, No								

a) Measured in unknown medium
* Sand soil was excluded during the previous evaluation due to low 1/n value

Table 8.5-4: Summary of soil adsorption/desorption for IC-0

IC-0								
Soil Type		**OC %**	**Soil pH[a)]**	**K_d (mL/g)**	**K_{doc} (mL/g)**	**K_F (mL/g)**	**K_{Foc} (mL/g)**	**1/n**
I	Sand	0.43	5.7			0.643	258	0.967
II	Loamy sand	2.54	7.6			1.027	70	1.007
III	Sandy loam	0.76	7.1			0.569	129	0.971
IV	Silt loam	2.05	7.7			0.833	70	0.894
V	Silt loam	1.41	7.1			0.69	84	0.926
Pond sediment*		4.32				2.121	85	0.867
Arithmetic mean (if not pH dependent)							122	0.953
pH dependence, No								

a) Measured in unknown medium
* Sediment excluded during the previous evaluation

Table 8.5-5: Summary of soil adsorption/desorption for IM-1-5

IM-1-5							
Soil Type	OC %	**Soil pH[a)]**	**K_d (mL/g)**	**K_{doc} (mL/g)**	**K_F (mL/g)**	**K_{Foc} (mL/g)**	**1/n**
Spain (Canals)	3.3	7.6			5.70	173	0.8788
S France (Meauzac)	1.14	7.6			4.89	429	0.9030
Hungary	2.03	7.8			7.58	374	0.8454
N France (Meistratzheim)	2.04	8.3			6.60	324	0.9176
Arithmetic mean (if not pH dependent)						325	0.886
pH dependence, No							

a) Measured in $CaCl_2$

8.5.2 Deltamethrin and its metabolites

Table 8.5-3: Summary of soil adsorption/desorption for deltamethrin

K_f /K_{oc} K_d pH dependence (yes / no) (if yes type of dependence)	Deltamethrin: K_f 3,790, 9,600, 26,700,_30,000 (1/n 0.74-1.2) K_{oc} 460,000, 11,400,000, 12,800,000, 16,300,000 mean 10,240,000 (n=4) no pH dependence

Table 8.5-4: Summary of soil adsorption/desorption for Br2CA

K_f /K_{oc} K_d pH dependence (yes / no) (if yes type of dependence)	Br_2CA: Kf 0.27, 0.36, 0.59 (1/n 0.84-0.96) Koc 10, 23, 44 mean 26 (n=3) no pH dependence

8.5.3 Column leaching (KCP 9.1.2.1)

Column Leaching for Acetamiprid:

Column leaching	no data submitted and no data required
	Leachate: 0.3-1.3 % total residues/radioactivity in leachate 0.06 % active substance, 0.84 % IM-1-4 88.9- 93.7 % total residues/radioactivity retained in the four upper soil layers

Mobility in soil column leaching transformation products

Column leaching	Elution (mm): 1038 mm Time period (d): 20 d
	Leachate: 4.14 – 22.22 % total residues/radioactivity in leachate, all associated with metabolite IC-0 4.5 - 5.3 % total residues/radioactivity retained in top 6 cm

Column Leaching for Deltamethrin:

> 96% of applied radioactivity in top 0-2.5 cm in columns with 2 different soils and 1 sand

8.5.4 Lysimeter studies (KCP 9.1.2.2)

No data submitted and no data required for acetamiprid and deltamethrin.

8.5.5 Field leaching studies (KCP 9.1.2.3)

No data submitted and no data required for acetamiprid.

Field leaching studies for deltamethrin:

US (Minnesota) field dissipation study: deltamethrin residues mainly confined to upper 0-15 cm, Br2CA sampled to 30 cm depth, not detected (limit of quantification 0.01 mg/kg).

8.6 Degradation in the water/sediment systems (KCP 9.2, KCP 9.2.1, KCP 9.2.2, KCP 9.2.3)

Studies on degradation in water/sediment systems with the formulation were not performed, since it is possible to extrapolate from data obtained with the active substance.

8.6.1 Acetamiprid and its metabolites

Table 8.6-1: Summary of degradation in water/sediment of acetamiprid (EFSA Journal 2016;14(11):4610)

Photolytic degradation of active substance and metabolites above 10 %	DT_{50} : 34 days (irradiated samples) no photodegradation in dark samples IB-1-1: 35%AR (30 d)
Quantum yield of direct phototransformation in water at λ > 290 nm	Φdc of 0.10

Aerobic mineralisation in surface water:

Parent										
System identifier (indicate fresh, estuarine or marine)	**pH water phase**	**pH sed** a)	**t. °C** b)	**DT_{50} / DT_{90} whole sys. (suspended sediment test)**		**St. (χ^2)**	**DT_{50} / DT_{90} Water (pelagic test)**		**St. (χ^2)**	**Method of calculation**
				At study temp	Normalised to *x* °C c)		At study temp	DT_{50} at 12 °C c)		
Kolbenwoog low dose system (2 µg/L)	5.41		20				2.4 / 36.9	5.1	4.2	DFOP
Kolbenwoog high dose system (10 µg/L)	5.41		20				6.8 / 87.8	14.5	7.1	FOMC

a) Measured in [medium to be stated, usually calcium chloride solution or water]
b) Temperature of incubation=temperature that the environmental media was collected or std temperature of 20°C
c) Normalised using a Q10 of 2.58 to the temperature of the environmental media at the point of sampling

Mineralisation and non extractable residues (for parent dosed experiments)					
System identifier (indicate fresh, estuarine or marine)	**pH water phase**	**pH sed**	**Mineralisation *x* % after *n* d. (end of the study).**	**Non-extractable residues. max *x* % after *n* d (suspended sediment test)**	**Non-extractable residues. max *x* % after *n* d (end of the study) (suspended sediment test)**
Kolbenwoog low dose system (2 µg/L)	5.41		0.35 %, 59 d	n.r.	n.r.
Kolbenwoog high dose system (10 µg/L)	5.41		0.16 %, 59 d	n.r.	n.r.

Parent	**Distribution (*max in water101.42% after0 d. Max. sed 39.05 % after14 d*)**									
Water / sediment system	**pH water phase**	**pH sed** [a)]	**t. °C**	**DT_{50} / DT_{90} whole sys.**	**St. (χ^2)**	**DT_{50} / DT_{90} water**	**St. (χ^2)**	**DT_{50} / DT_{90} sed**	**St. (χ^2)**	**Method of calculation**
Manningtree	6.37/5.9	n.r.	20	23.1	7.6	4.9	8.3	n.c.		SFO/DFOP
Ongar	7.58/7.3	n.r.	20	31.6	6.7	6.1	5.9	n.c.		SFO/DFOP
Geometric mean at 20°C[b)]				27						

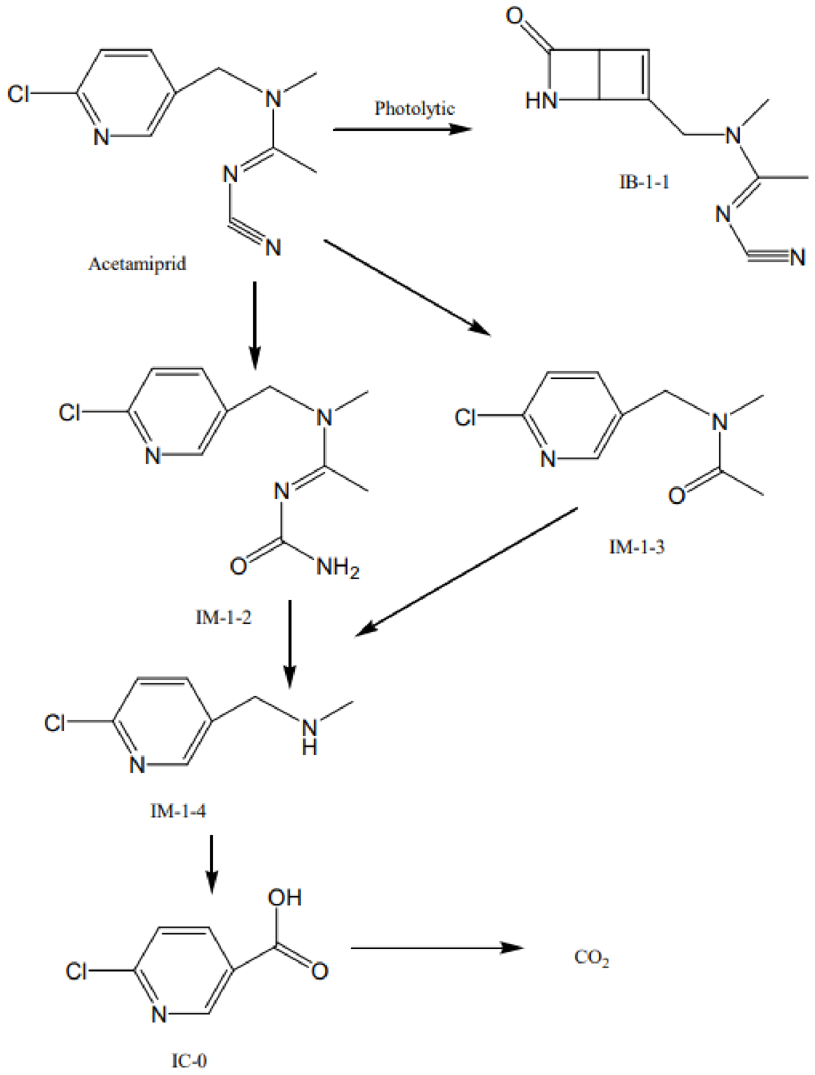
[a)] Measured in unknown medium
[b)] Normalised using a Q10 of 2.58

Mineralisation and non extractable residues (from parent dosed experiments)					
Water / sediment system	pH water phase	pH sed	Mineralisation x % after n d. (end of the study).	Non-extractable residues in sed. max x % after n d	Non-extractable residues in sed. max x % after n d (end of the study)
Manningtree	6.37/5.9	n.r.	10.03 %, 155 d	40.65%, 155 d	40.65%, 155 d
Ongar	7.58/7.3	n.r.	28.31 %, 155 d	21.12%, 155 d	21.12%, 155 d

Table 8.6-2: Summary of observed metabolites (EFSA Journal 2016;14(11):4610)

Metabolite IM-1-2	Distribution (*max in water10.96 % after7 d. Max. sed 3.93 % after14 d*). Max in total system 13.4 % after 7 days No acceptable fit possible
Metabolite IM-1-4	Distribution (*max in water12.33 % after30 d. Max. sed 30.71 % after30 d*). Max in total system 43 % after 30 days; Max 81.5% in aerobic mineralisation study No acceptable fit possible
Metabolite IC-0	Distribution (*max in water26.15 % after62 d. Max. sed. 5.61 % after100 d*). Max in total system 29.5 % after 62 days No acceptable fit possible

Proposed degradation route of acetamiprid in water



8.6.2 Deltamethrin and its metabolites

Table 8.6-3: Summary of degradation in water/sediment of deltamethrin

Route and rate of degradation in water	
Hydrolysis of active substance and relevant metabolites (DT_{50}) (state pH and temperature)	pH 5 (25°C): stable
	pH 7 (25°C): stable
	pH 8 (23°C): 31 days, to mPBaldehyde[2]
	pH 9 (25°C): 2.5 days, to mPBaldehyde (main) and Br_2CA (trace)
Photolytic degradation of active substance and relevant metabolites	direct phototransformation insignificant ($DT_{50} \geq 48$ d) indirect phototransformation DT_{50} 4 days, mainly to mPBacid[3]
Readily biodegradable (yes/no)	no
Degradation in water/sediment - DT_{50} water - DT_{90} water - DT_{50} whole system - DT_{90} whole system	- - 40-90 days (r^2 0.81-0.93) (n=4, 2 systems, pH 8.0-9.1) median DT_{50} 65 days 130-290 days Rate of disappearance from water in higher tier studies (micro/mesocosms and natural ponds): Microcosm (spray-drift simulation) pH 7.2-10.1: DT_{50} 6 h (best fit sq rt 1st order, DT_{90} 65 days). Mesocosms (subsurface injected) pH 7.6-10: DT_{50} 2-4 h. Natural pond (surface sprayed) pH 7.7: DT_{50} 1.5 h Natural ponds (sprayed by aircraft) pH 7.2-8.5: DT_{50} 6.7-16.7 h (n=5, average 13 h) Microcosms (subsurface dosed) pH 8.3-9.3: $DT_{50} \leq 17$ h Overall worst-case DT_{50}: 17 hours
Mineralization	21-29% after 84 days (benzyl-^{14}C)
Non-extractable residues	7.8-17% after 84 days
Distribution in water / sediment systems (active substance) ‡	Two water/sediment systems: 22-23% (water) / 60-62 % (sediment) day 0; 4-10 % (water) / 84% (sediment) day 4; 0% (water) / 39-70% (sediment) day 28.
Distribution in water / sediment systems (metabolites) ‡	Total radioactivity in 2 systems: 37-38% (water) / 60-63% (sed.) day 0; 10-20% (water) / 75-89% (sed.) day 4; 0-0.25% (water) / 65-82% (sed.) day 28.

Table 8.6-4: Summary of laboratory studies on the fate of deltamethrin in water.

Study/Conditions	DT_{50}	DT_{90}	CO_2, % of applied ^{14}C (after days)	Other results
Smith, 1990b: Hydrolysis at 25°C, pH 9	2.5 d[1]	8-9 d[2]	-	hydrolysis insignificant at pH 5 and 7 over 30 days
Devaux, 1993: UV/VIS spectra	-	-	-	max. at ≈270 and ≈280 nm no absorption ≥~~above~~ 300 nm
Wang and Reynolds, 1991b: Aqueous photolysis				

unsensitised system, pH 7, 25°C	Slow transformation observed			
Bowman and Carpenter, 1987: Aqueous photolysis:				
unsensitised system, pH 5, 25°C:	48 d[1]	-	<2 (30)	
sensitised system, pH 5, 25°C:	4 d[1]	-	<2 (30)	
Wüthrich, 1994: Ready biodegradability test	-	-	-	Not ready biodegradable
Muttzall, 1993: Sediment/water, pH 8.5 (aq), 20°C	40 d[1]	130 d[2]	29 (84)	max. 19% unextractable
loamy sediment with 12% OM	85-90 d[1]	290 d[2]	21 (84)	max. 8% unextractable
sandy sediment with 3% OM				
Muir et al, 1985: Sediment/water, pH 8.35 (aq), °C				Note: DT_{50} refers to
?,	12-21 h	-	-	disappearance from
sand	17- >24 h	-	-	water, not degradation
silty-clay river sediment 2.3% OC		-	-	only
pond bottom clay 3.7% OC	12 h			

d = days, h= hours
1 DT_{50} estimations based on the assumption of first order kinetics.
2 Predicted DT_{90} from first order rate constants.

Summary of observed metabolites

α-R-deltamethrin max 21-24% after 1-2 weeks, no other products > 10%, Br2CA not possible to detect due to position of 14C-labelling. Identification of metabolites in higher tier studies (micro/mesocosms and natural ponds): Ester cleavage products Br2CA and mPBacid, trans-deltamethrin, and inactive isomers α-R-deltamethrin and 2+2'-deltamethrin found in micro/mesocosms and natural ponds. Br2CA as max. 53% and 23% of total radioactivity remaining in water at day 7, following spray drift and run-off simulation, respectively. α-R-deltamethrin at max. 20 and 46% of 14C in water after 2 and 8 h, then rapid decline. trans-deltamethrin max. 17% after 24 h in one of the microcosm studies

8.7 Predicted Environmental Concentrations in soil (PEC_{soil}) (KCP 9.1.3)

zRMS Comments:	Calculations of PEC_S for both active substances, their metabolites and formulation submitted by the Applicant were submitted. The endpoints of both active substances used for PECs assessment were agreed at the EU level. The following application pattern was used in PECs assessment:

Crop	**BBCH**
Winter OSR	10-21 (worst case) and 30-70
Winter wheat, winter triticale	37-75
Sugar beet	12-19

Acetamiprid. The PECs values for active substance was accepted, but for all metabolites the PECs were recalculated by zRMS considering the molar masses and maximum of metabolite formation.

	The maximum PEC_S values for active substance and its metabolites are presented in following table: **Crop** / **Acetamiprid** / **IM-I-2** / **IM-I-4** / **IM-I-5** / **IC-0** Winter OSR: 0.0320 / 0.0190 / 0.0162 / 0.0057 / 0.0026 Winter wheat, winter triticale: 0.0107 / 0.0064 / 0.0054 / 0.0019 / 0.0009 Sugar beet: 0.0427 / 0.0254 / 0.0216 / 0.0076 / 0.0034 **Deltamethrin**. The PECs values for active substance and its metabolites were not accepted, but for all metabolites the PECs were recalculated by zRMS considering the molar masses and maximum of metabolite formation. The maximum PEC_S values for active substance and its metabolites are presented in following table: **Crop** / **Deltamethrin** / **Br2CA** Winter OSR: 0.0038 / 0.001 Winter wheat, winter triticale: 0.0013 / 0.0003 Sugar beet: 0.0051 / 0.0010 **Formulation**. The PECs assessment for formulation use in accordance with risk envelope approach was corrected. The density of formulation of 1.085 g/mL (based on phys-chem section) was used in further calculations. The PECs is presented in the table below: **Crop** / **Formulation** Winter OSR: 0.1389 Winter wheat, winter triticale: 0.0463 Sugar beet: 0.1852 These values will be used in further risk assessment.

8.7.1 Justification for new endpoints

No new endpoints required, all endpoints were taken from EFSA Journal 2016;14(11):4610 and SANCO/6504/VI/99-final 17 October 2002

8.7.2 Active substance(s) and relevant metabolite(s)

The values presented below are intended for the worst case scenario calculations.

Table 8.7-1: Input parameters related to application for PEC_{soil} calculations

Use No.			
Crop	Winter oilseed rape (worst case used for every usage in this crop)	Winter cereals	Sugar beet
Application rate (g as/ha)	Acetamiprid: 40	Acetamiprid: 40	Acetamiprid: 40

	Deltamethrin: 4.8	Deltamethrin: 4.8	Deltamethrin: 4.8
Number of applications/interval	1/-	1/-	1/-
Crop interception (%)	40	80	20
Depth of soil layer (relevant for plateau concentration) (cm)	5 cm	5 cm	5 cm

Table 8.7-2: Input parameter for active substance(s) and relevant metabolite(s) for PEC_{soil} calculation

Compound	Molecular weight (g/mol)	Max. occurrence (%)	DT50 (days)	Value in accordance to EU endpoint y/n/ Reference
Acetamiprid	222.68	-	12.96 days	EFSA Journal 2016;14(11):4610
IM-1-2	240.69	55	1.9 days	EFSA Journal 2016;14(11):4610
IM-1-4	156.61	72	146 days	EFSA Journal 2016;14(11):4610
IC-0	157.55	11.3	5.6 days	EFSA Journal 2016;14(11):4610
IM-1-5	197.66	20	1000 days	EFSA Journal 2016;14(11):4610
Deltamethrin	505.2	-	21	SANCO/6504/VI/99-final 17 October 2002
Br_2CA	297.97	23%	2.3	SANCO/6504/VI/99-final 17 October 2002

8.7.2.1 Acetamiprid and its metabolites

Table 8.7-3: PEC_{soil} for acetamiprid on Winter oilseed rape

PEC_{soil} (mg/kg)		Winter oilseed rape			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.0320	-		-
Short term	24h	0.0303	0.0312		
	2d	0.0288	0.0304		
	4d	0.0258	0.0288		
Long term	7d	0.0220	0.0267		
	14d	0.0151	0.0225		

	21d	0.0104	0.0192		
	28d	0.0072	0.0166		
	50d	0.0022	0.0111		
	100d	0.0002	0.0060		
Plateau concentration (5 cm) after year 10		<0.0001	-		-
$PEC_{accumulation}$ (PEC_{act} +$PEC_{soil\ plateau}$)		0.0320			

PEC_{soil} of metabolites

Table 8.7-4: PEC_{soil} for IM-1-2 on winter oilseed rape

PEC_{soil} (mg/kg)		Winter oilseed rape			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.0072	-		-
Short term	24h	0.0071	0.0072		
	2d	0.0070	0.0072		
	4d	0.0066	0.0071		
Long term	7d	0.0057	0.0069		
	14d	0.0040	0.0063		
	21d	0.0028	0.0056		
	28d	0.0019	0.0050		
	50d	0.0006	0.0034		
	100d	<0.0001	0.0019		
Plateau concentration (5 cm) after year 10		<0.0001	-		-
$PEC_{accumulation}$ (PEC_{act} +$PEC_{soil\ plateau}$)		0.0072			

Table 8.7-5: PEC_{soil} for IM-1-4 on winter oilseed rape

PEC_{soil} (mg/kg)		Winter oilseed rape			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.0211	-		-
Short term	24h	0.0211	0.0211		
	2d	0.0211	0.0211		
	4d	0.0211	0.0211		
Long term	7d	0.0210	0.0211		
	14d	0.0207	0.0211		

	21d	0.0203	0.0210		
	28d	0..0199	0.0210		
	50d	0.0182	0.0206		
	100d	0.0144	0.0194		
Plateau concentration (5 cm) after year 10		0.0017			-
$PEC_{accumulation}$ (PEC_{act} +$PEC_{soil\ plateau}$)		0.0228			

Table 8.7-6: PEC_{soil} for IC-0 on Winter oilseed rape

PEC_{soil} (mg/kg)		Winter oilseed rape			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.0006			-
Short term	24h	0.0006	0.0006		
	2d	0.0006	0.0006		
	4d	0.0006	0.0006		
Long term	7d	0.0006	0.0006		
	14d	0.0004	0.0006		
	21d	0.0003	0.0006		
	28d	0.0002	0.0004		
	50d	0.0001	0.0004		
	100d	<0.0001	0.0002		
Plateau concentration (5 cm) after year 10		<0.0001			-
$PEC_{accumulation}$ (PEC_{act} +$PEC_{soil\ plateau}$)		0.0006			

Table 8.7-7: PEC_{soil} for IM-1-5 on Winter oilseed rape

PEC_{soil} (mg/kg)		Winter oilseed rape			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.0006			-
Short term	24h	0.0006	0.0006		
	2d	0.0006	0.0006		
	4d	0.0006	0.0006		
Long term	7d	0.0006	0.0006		
	14d	0.0006	0.0006		
	21d	0.0006	0.0006		
	28d	0.0006	0.0006		
	50d	0.0006	0.0006		

	~~100d~~	~~0.0006~~	~~0.0006~~		
~~Plateau concentration (5 cm) after year 10~~		~~0.0022~~			-
~~$PEC_{accumulation}$ (PEC_{act} +$PEC_{soil\ plateau}$)~~		~~0.0028~~			

Table 8.7-8: PEC_{soil} for acetamiprid on Winter cereal

PEC_{soil} (mg/kg)		winter cereal			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.0107	-		-
Short term	24h	0.0101	0.0104		
	2d	0.0096	0.0101		
	4d	0.0086	0.0096		
Long term	7d	0.0073	0.0089		
	14d	0.0050	0.0075		
	21d	0.0035	0.0064		
	28d	0.0024	0.0055		
	50d	0.0007	0.0037		
	100d	0.0001	0.0020		
Plateau concentration (5 cm) after year 10		<0.0001	-		-
$PEC_{accumulation}$ (PEC_{act} +$PEC_{soil\ plateau}$)		0.0107			

PEC_{soil} of metabolites

Table 8.7-9: PEC_{soil} for IM-1-2 on winter cereal

~~PEC_{soil} (mg/kg)~~		~~winter cereal~~			
		~~Single application~~		~~Multiple applications~~	
		~~Actual~~	~~TWA~~	~~Actual~~	~~TWA~~
~~Initial~~		~~0.0008~~	-		-
~~Short term~~	~~24h~~	~~0.0008~~	~~0.0008~~		
	~~2d~~	~~0.0008~~	~~0.0008~~		
	~~4d~~	~~0.0007~~	~~0.0008~~		
~~Long term~~	~~7d~~	~~0.0006~~	~~0.0008~~		
	~~14d~~	~~0.0004~~	~~0.0007~~		
	~~21d~~	~~0.0003~~	~~0.0006~~		
	~~28d~~	~~0.0002~~	~~0.0006~~		
	~~50d~~	~~0.0001~~	~~0.0004~~		

	100d	<0.0001	0.0002		
Plateau concentration (5 cm) after year 10		<0.0001	-		-
$PEC_{accumulation}$ (PEC_{act} + $PEC_{soil\ plateau}$)		0.0008			

Table 8.7-10: PEC$_{soil}$ for IM-1-4 on winter cereal

PEC$_{soil}$ (mg/kg)		winter cereal			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.0023	-		-
Short term	24h	0.0023	0.0023		
	2d	0.0023	0.0023		
	4d	0.0023	0.0023		
Long term	7d	0.0023	0.0023		
	14d	0.0023	0.0023		
	21d	0.0023	0.0023		
	28d	0.0022	0.0023		
	50d	0.0020	0.0023		
	100d	0.0016	0.0022		
Plateau concentration (5 cm) after year 10		0.0006			-
$PEC_{accumulation}$ (PEC_{act} + $PEC_{soil\ plateau}$)		0.0029			

Table 8.7-11: PEC$_{soil}$ for IC-0 on Winter cereal

PEC$_{soil}$ (mg/kg)		Winter cereal			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.0002			-
Short term	24h	0.0002	0.0002		
	2d	0.0002	0.0002		
	4d	0.0002	0.0002		
Long term	7d	0.0002	0.0002		
	14d	0.0001	0.0002		
	21d	0.0001	0.0002		
	28d	0.0001	0.0002		
	50d	<0.0001	0.0001		
	100d	<0.0001	0.0001		
Plateau concentration (5 cm)		<0.0001			-

after year 10					
$PEC_{accumulation}$ (PEC_{act} +$PEC_{soil\ plateau}$)		0.0002			

Table 8.7-12: PEC_{soil} for IM-1-5 on Winter cereal

PEC_{soil} (mg/kg)		Winter cereal			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.0002			-
Short term	24h	0.0002	0.0002		
	2d	0.0002	0.0002		
	4d	0.0002	0.0002		
Long term	7d	0.0002	0.0002		
	14d	0.0002	0.0002		
	21d	0.0002	0.0002		
	28d	0.0002	0.0002		
	50d	0.0002	0.0002		
	100d	0.0002	0.0002		
Plateau concentration (5 cm) after year 10		0.0007			-
$PEC_{accumulation}$ (PEC_{act} +$PEC_{soil\ plateau}$)		0.0009			

Table 8.7-15: PEC_{soil} for acetamiprid on sugar beets

PEC_{soil} (mg/kg)		sugar beets			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.0427	-		-
Short term	24h	0.0404	0.0416		
	2d	0.0383	0.0405		
	4d	0.0344	0.0384		
Long term	7d	0.0293	0.0356		
	14d	0.0202	0.0300		
	21d	0.0139	0.0256		
	28d	0.0095	0.0221		
	50d	0.0029	0.0149		
	100d	0.0002	0.0079		
Plateau concentration (5 cm) after year 10		<0.0001	-		-
$PEC_{accumulation}$ (PEC_{act} +$PEC_{soil\ plateau}$)		0.0427			

PEC_{soil} of metabolites

Table 8.7-16: PEC_{soil} for IM-1-2 on sugar beets

PEC_{soil} (mg/kg)		sugar beets			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.0043	-		-
Short term	24h	0.0042	0.0042		
	2d	0.0042	0.0042		
	4d	0.0039	0.0042		
Long term	7d	0.0034	0.0041		
	14d	0.0024	0.0037		
	21d	0.0016	0.0033		
	28d	0.0011	0.0029		
	50d	0.0003	0.0020		
	100d	<0.0001	0.0011		
Plateau concentration (5 cm) after year 10		<0.0001	-		-
$PEC_{accumulation}$ (PEC_{act} +$PEC_{soil\ plateau}$)		0.0043			

Table 8.7-15: PEC_{soil} for IM-1-4 on sugar beets

PEC_{soil} (mg/kg)		Sugar beets			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.0125	-		-
Short term	24h	0.0125	0.0125		
	2d	0.0125	0.0125		
	4d	0.0125	0.0125		
Long term	7d	0.0125	0.0125		
	14d	0.0123	0.0125		
	21d	0.0121	0.0125		
	28d	0.0118	0.0124		
	50d	0.0108	0.0123		
	100d	0.0086	0.0115		
Plateau concentration (5 cm) after year 10		0.0022			-
$PEC_{accumulation}$ (PEC_{act} +$PEC_{soil\ plateau}$)		0.0148			

Table 8.7-16: PEC_{soil} for IC-0 on sugar beets

PEC_{soil} (mg/kg)		Sugar beets			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.0011			-
Short term	24h	0.0011	0.0011		
	2d	0.0011	0.0011		
	4d	0.0011	0.0011		
Long term	7d	0.0010	0.0011		
	14d	0.0008	0.0010		
	21d	0.0006	0.0010		
	28d	0.0004	0.0009		
	50d	0.0001	0.0007		
	100d	<0.0001	0.0004		
Plateau concentration (5 cm) after year 10		<0.0001			-
$PEC_{accumulation}$ (PEC_{act} +$PEC_{soil\ plateau}$)		0.0011			

Table 8.7-17: PEC_{soil} for IM-1-5 on sugar beets

PEC_{soil} (mg/kg)		Sugar beets			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.0011			-
Short term	24h	0.0011	0.0011		
	2d	0.0011	0.0011		
	4d	0.0011	0.0011		
Long term	7d	0.0011	0.0011		
	14d	0.0011	0.0011		
	21d	0.0011	0.0011		
	28d	0.0011	0.0011		
	50d	0.0011	0.0011		
	100d	0.0010	0.0011		
Plateau concentration (5 cm) after year 10		0.0029			-
$PEC_{accumulation}$ (PEC_{act} +$PEC_{soil\ plateau}$)		0.0040			

8.7.2.2 Deltamethrin and its metabolites

Table 8.7-18: PEC_{soil} for deltamethrin on Winter oilseed rape

PEC_{soil} (mg/kg)		Winter oilseed rape			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.0320	-		-
Short term	24h	0.0310	0.0315		
	2d	0.0300	0.0310		
	4d	0.0280	0.0300		
Long term	7d	0.0254	0.0286		
	14d	0.0202	0.0256		
	21d	0.0160	0.0231		
	28d	0.0127	0.0209		
	50d	0.0061	0.0157		
	100d	0.0012	0.0093		
Plateau concentration (5 cm) after year 10		<0.0001	-		-
$PEC_{accumulation}$ (PEC_{act} +$PEC_{soil\ plateau}$)		0.0320			

Table 8.7-19: PEC_{soil} for Br_2CA on Winter oilseed rape

PEC_{soil} (mg/kg)		Winter oilseed rape			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.0003	-		-
Short term	24h	0.0003	0.0003		
	2d	0.0003	0.0003		
	4d	0.0003	0.0003		
Long term	7d	0.0003	0.0003		
	14d	0.0002	0.0003		
	21d	0.0002	0.0003		
	28d	0.0001	0.0003		
	50d	0.0001	0.0002		
	100d	0.0001	0.0002		
Plateau concentration (5 cm) after year 10		<0.0001	-		-
$PEC_{accumulation}$ (PEC_{act} +$PEC_{soil\ plateau}$)		0.0003			

Table 8.7-20: PEC$_{soil}$ for deltamethrin on Winter cereal

PEC$_{soil}$ (mg/kg)		winter cereal			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.0107	-		-
Short term	24h	0.0103	0.0105		
	2d	0.0100	0.0103		
	4d	0.0093	0.0100		
Long term	7d	0.0085	0.0095		
	14d	0.0067	0.0085		
	21d	0.0053	0.0077		
	28d	0.0042	0.0070		
	50d	0.0020	0.0052		
	100d	0.0004	0.0031		
Plateau concentration (5 cm) after year 10		<0.0001	-		-
PEC$_{accumulation}$ (PEC$_{act}$ +PEC$_{soil\ plateau}$)		0.0107			

Table 8.7-21: PEC$_{soil}$ for Br_2CA on Winter cereal

PEC$_{soil}$ (mg/kg)		winter cereal			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		<0.0001	<0.0001		-
Short term	24h	<0.0001	<0.0001		
	2d	<0.0001	<0.0001		
	4d	<0.0001	<0.0001		
Long term	7d	<0.0001	<0.0001		
	14d	<0.0001	<0.0001		
	21d	<0.0001	<0.0001		
	28d	<0.0001	<0.0001		
	50d	<0.0001	<0.0001		
	100d	<0.0001	<0.0001		
Plateau concentration (5 cm) after year 10		<0.0001	-		-
PEC$_{accumulation}$ (PEC$_{act}$ +PEC$_{soil\ plateau}$)		<0.0001			

Table 8.7-22: PEC$_{soil}$ for deltamethrin on sugar beets

PEC$_{soil}$	sugar beets

~~(mg/kg)~~		~~Single application~~		~~Multiple applications~~	
		~~Actual~~	~~TWA~~	~~Actual~~	~~TWA~~
~~Initial~~		~~0.0427~~	-		-
~~Short term~~	~~24h~~	~~0.0413~~	~~0.0420~~		
	~~2d~~	~~0.0399~~	~~0.0413~~		
	~~4d~~	~~0.0374~~	~~0.0400~~		
~~Long term~~	~~7d~~	~~0.0339~~	~~0.0381~~		
	~~14d~~	~~0.0269~~	~~0.0342~~		
	~~21d~~	~~0.0213~~	~~0.0308~~		
	~~28d~~	~~0.0169~~	~~0.0278~~		
	~~50d~~	~~0.0082~~	~~0.0209~~		
	~~100d~~	~~0.0016~~	~~0.0125~~		
~~Plateau concentration (5 cm) after year 10~~		~~<0.0001~~	-		-
~~$PEC_{accumulation}$ (PEC_{act} +$PEC_{soil\ plateau}$)~~		~~0.0427~~			

Table 8.7-23: PEC_{soil} for Br_2CA on sugar beets

~~PEC_{soil} (mg/kg)~~		~~sugar beets~~			
		~~Single application~~		~~Multiple applications~~	
		~~Actual~~	~~TWA~~	~~Actual~~	~~TWA~~
~~Initial~~		~~0.0022~~	-		-
~~Short term~~	~~24h~~	~~0.0022~~	~~0.0022~~		
	~~2d~~	~~0.0022~~	~~0.0022~~		
	~~4d~~	~~0.0021~~	~~0.0022~~		
~~Long term~~	~~7d~~	~~0.0020~~	~~0.0022~~		
	~~14d~~	~~0.0016~~	~~0.0021~~		
	~~21d~~	~~0.0013~~	~~0.0019~~		
	~~28d~~	~~0.0010~~	~~0.0018~~		
	~~50d~~	~~0.0005~~	~~0.0015~~		
	~~100d~~	~~0.0001~~	~~0.0014~~		
~~Plateau concentration (5 cm) after year 10~~		~~<0.0001~~	-		-
~~$PEC_{accumulation}$ (PEC_{act} +$PEC_{soil\ plateau}$)~~		~~0.0022~~			

8.7.2.3 PEC_{soil} of CHR/I/ADEL 280 SC

PECsoil formulation = (App_{rate} *(1- $Crop_{int}$))/(100 * d * q), where:

Apprate – apllication rate [g/ha]
Cropint – crop interception
d – depth [cm]
q – density (1.5 g/cm^3]

Table 8.7-1: PEC_{soil} for CHR/I/ADEL 280 SC on Winter oilseed rape

Active substance/ reparation	Application rate (g/ha)	PEC_{act} (mg/kg)	PEC_{twa}21 d (mg/kg)	Tillage depth (cm)	$PEC_{soil,plateau}$ (mg/kg)	PEC_{accu} = PEC_{act} + $PEC_{soil,plateau}$ (mg/kg)
CHR/I/ADEL 280 SC	~~174.18~~ 173.6	~~0.1393~~ 0.1389	-	5	-	-

PEC_{soil} = (174.18/ha * (1-0.4))/750 = 0. 1393 mg/kg

PEC_{soil} for CHR/I/ADEL 280 SC on Winter cereals

Table 8.7-2: PEC_{soil} for CHR/I/ADEL 280 SC on Winter Cereals

Active substance/ reparation	Application rate (g/ha)	PEC_{act} (mg/kg)	PEC_{twa}21 d (mg/kg)	Tillage depth (cm)	$PEC_{soil,plateau}$ (mg/kg)	PEC_{accu} = PEC_{act} + $PEC_{soil,plateau}$ (mg/kg)
CHR/I/ADEL 280 SC	~~174.18~~ 173.6	~~0.0464~~ 0.0463	-	5	-	-

PEC_{soil} = (174.18/ha * (1-0.8))/750 = 0.0464 mg/kg

PEC_{soil} for CHR/I/ADEL 280 SC on Sugar beets

Table 8.7-3: PEC_{soil} for CHR/I/ADEL 280 SC on Sugar beets

Active substance/ reparation	Application rate (g/ha)	PEC_{act} (mg/kg)	PEC_{twa}21 d (mg/kg)	Tillage depth (cm)	$PEC_{soil,plateau}$ (mg/kg)	PEC_{accu} = PEC_{act} + $PEC_{soil,plateau}$ (mg/kg)
Acetamiprid, Deltamethrin	~~174.18~~ 173.6	~~0.1858~~ 0.1852	-	5	-	-

PEC_{soil} = (174.18/ha * (1-0.2))/ 750 = 0.18517 mg/kg

8.8 Predicted Environmental Concentrations in groundwater (PEC_{gw}) (KCP 9.2.4)

Evaluator's Comments:	The submitted PECgw assessment was accepted. All used endpoints were agreed at the EU level. The recommended FOCUS models were used: FOCUS PELMO and FOCUS PEARL. **Acetamipirid**. Calculations of PECgw for active substance and its relevant metabolites were provided in Tier 1 with PUF = 0, only for IM-1-5 metabolite the PUF = 0.5 was used (in accordance with LoEP, 2016). PECgw values for active substance and metabolites IM-1-2, IM-1-4 and IC-0 are below the trigger value of 0.1 µg/L. In accordance with EFSA conclusion (2016) the metabolite IM-1-5 is to be present in ~~calcareous~~ alkaline soils only. The submitted PECgw assessment for this metabolite considers its presence in alkaline soils. The PECgw assessment for metabolite IM-1-5 is also below the trigger value of 0.1 µg/L for all crops. The additional PECgw assessment updated with PUF=0 for metabolite MI-I-5 was provided and accepted. Based on submitted assessment it can be concluded that the safe use for annual application of Adel 280 SC in winter OSR and winter cereals was confirmed. For sugar beets – every other year application of Adel 280 SC is required. **Deltamethrin**. Calculations of PECgw for active substance and its relevant metabolites were provided in Tier 1 with PUF = 0. The PECgw was corrected: instead of 0.00000 the < 0.001 was added. PECgw values for active substance and metabolite Br_2CA are below the trigger value of 0.1 µg/L.

8.8.1 Justification for new endpoints

No new endpoints required, all endpoints were taken from EFSA Journal 2016;14(11):4610 and SANCO/6504/VI/99-final 17 October 2002

8.8.2 Active substance(s) and relevant metabolite(s) (KCP 9.2.4.1)

The values presented below are intended for the worst case scenario calculations.

Table 8.8-1: Input parameters related to application for PEC_{gw} calculations

Use No.			
Crop	Winter oilseed rape (worst case used for every usage in	Winter cereal	Sugar beet

	this crop)		
Application rate (g as/ha)	Acetamiprid 40 Deltamethrin 4.8	Acetamiprid 40 Deltamethrin 4.8	Acetamiprid 40 Deltamethrin 4.8
Number of applications/interval (d)	1/-	1/-	1/-
Relative application date	1 day after first emergance in the year	98 days before first harvest in the year	10 days after first emergance in the year
Crop interception (%)	40	80	20
Frequency of application	annual	annual	annual
Models used for calculation	FOCUS PEARL v4.4.4, FOCUS PELMO v5.5.3 FOCUS PEARL v5.5.5 (for IM-1-5 metabolite)	FOCUS PEARL v4.4.4, FOCUS PELMO v5.5.3 FOCUS PEARL v5.5.5 (for IM-1-5 metabolite)	FOCUS PEARL v4.4.4, FOCUS PELMO v5.5.3 FOCUS PEARL v5.5.5 (for IM-1-5 metabolite)

8.8.2.1 Acetamiprid and its metabolites

Table 8.8-2: Input parameters related to active substance acetamiprid and metabolites for PEC_{gw} calculations

Compound	Acetamiprid	IM-1-2	IM-1-4	IC-0	IM-1-5	Value in accordance with EU endpoint y/n/ Reference*
Molecular weight (g/mol)	222.68	240.69	156.61	157.55	197.66	EFSA Journal 2016;14(11):4610
Water solubility (mg/l):	2950	1 x 10^6	1 x 10^6	1 x 10^6	1 x 10^6	EFSA Journal 2016;14(11):4610
Saturated vapour pressure (Pa):	1 x 10^{-6}	1 x 10^{-8}	1 x 10^{-8}	1 x 10^{-8}	1 x 10^{-8}	EFSA Journal 2016;14(11):4610
DT_{50} in soil (d)	1.6 (geomean, normalisation to 10 kPa or pF2, 20 °C with Q_{10} of 2.58 Walker equation coefficient 0.7)	1.7 (geomean, normalisation to 10kPa or pF2, 20 °C with Q10 of 2.58 and Walker equation coefficient 0.7).	17.6 (geomean, normalisation to 10kPa or pF2, 20 °C with Q10 of 2.58 and Walker equation coefficient 0.7)	2.7 (geomean, normalisation to 10kPa or pF2, 20 °C with Q10 of 2.58 and Walker equation coefficient 0.7)	495 (geomean, normalisation to 10kPa or pF2, 20 °C with Q10 of 2.58 and Walker equation coefficient 0.7)	EFSA Journal 2016;14(11):4610
DT_{50} in soil (d) lab	1.6	1.7	17.6	2.7	495	EFSA Journal 2016;14(11):4610
Transformation rate	0.333577/per day to IM-1-2	0.301723/ per day to	0.026386/per day to IC-0	0.256721/per day to CO_2	0.0014/per day to CO_2	EFSA Journal 2016;14(11):4610

Compound	Acetamiprid	IM-1-2	IM-1-4	IC-0	IM-1-5	Value in accordance with EU endpoint y/n/ Reference*
	0.064982/per day to IM-1-5	IM-1-4 0.10601/per day to CO_2	0.012996/per day to CO_2			
K_{foc} (mL/g)/K_{fom}	106.5	54	171	122	325	EFSA Journal 2016;14(11):4610
1/n	0.86	0.9	0.764	0.953	0.886	EFSA Journal 2016;14(11):4610
Plant uptake factor	0	0	0	0	0.5 0.0	EFSA Journal 2016;14(11):4610
Formation fraction	-	0.77 from parent	0.74 from IM-1-2	0.64 from IM-1-4	0.15 from parent	EFSA Journal 2016;14(11):4610

* Delete row in case of no pH dependency

Additional calculations were performed for acetamiprid and its metabolite IM-1-5 using a PUF value of 0.0 for this metabolite. This represents a more worst-case scenario. Calculations were not performed for the remaining metabolites, as previous assessments had already been conducted assuming PUF = 0.0, and because metabolite IM-1-5 is formed exclusively from acetamiprid, making the inclusion of other metabolites unnecessary.

Table 8.8-3: PEC$_{gw}$ for acetamiprid and metabolites on Winter oilseed rape (with FOCUS PEARL 4.4.4)

Crop	Scenario	80th Percentile PEC$_{gw}$ at 1 m Soil Depth (µg/L)				
		Acetamiprid	**IM-1-2**	**IM-1-4**	**IC-0**	**IM-1-5 For PUF = 0.5**
Winter oilseed rape	Châteaudun	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	0.015427
	Hamburg	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	0.059166
	Kremsmünster	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	0.042791
	Okehampton	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	0.059908
	Piacenza	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	0.035180
	Porto	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	0.034768

Table 8.8-4: PEC_{gw} for acetamiprid and metabolites on Winter oilseed rape (with FOCUS PEARL v5.5.5) for metabolite IM-1-5 with PUF = 0.0

Crop	Scenario	80^{th} Percentile PEC_{gw} at 1 m Soil Depth (µg/L)	
		Acetamiprid	IM-1-5 For PUF = 0.0
Winter oilseed rape	Châteaudun	< 0.001	0.0220
	Hamburg	< 0.001	0.0789
	Kremsmünster	< 0.001	0.0563
	Okehampton	< 0.001	0.0726
	Piacenza	< 0.001	0.0403
	Porto	< 0.001	0.0436

Table 8.8-45: PEC_{gw} for acetamiprid and metabolites on Winter oilseed rape (with FOCUS PELMO 5.5.3)

Crop	Scenario	80^{th} Percentile PEC_{gw} at 1 m Soil Depth (µg/L)				
		Acetamiprid	IM-1-2	IM-1-4	IC-0	IM-1-5 For PUF = 0.5
~~Sugar beets~~ Winter Oilseed rape	Châteaudun	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	0.004
	Hamburg	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	0.059
	Kremsmünster	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	0.051
	Okehampton	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	0.078
	Piacenza	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	0.044
	Porto	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	0.048

Table 8.8-6: PEC_{gw} for acetamiprid and metabolites on Winter oilseed rape (with FOCUS PELMO 5.5.3)

Crop	Scenario	80^{th} Percentile PEC_{gw} at 1 m Soil Depth (µg/L)	
		Acetamiprid	IM-1-5 For PUF = 0.0
Winter oilseed rape	Châteaudun	< 0.001	0.006
	Hamburg	< 0.001	0.074
	Kremsmünster	< 0.001	0.065
	Okehampton	< 0.001	0.094

	Piacenza	< 0.001	0.050
	Porto	< 0.001	0.054

Table 8.8-~~5~~7: PEC$_{gw}$ for acetamiprid and metabolites on Winter cereals (with FOCUS PEARL 4.4.4)

Crop	Scenario	80th Percentile PEC$_{gw}$ at 1 m Soil Depth (µg/L)				
		Acetamiprid	IM-1-2	IM-1-4	IC-0	IM-1-5 For PUF = 0.5
Winter cereals	Châteaudun	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	0.000782
	Hamburg	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	0.011915
	Jokioinen	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	0.000000
	Kremsmünster	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	0.008808
	Okehampton	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	0.014501
	Piacenza	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	0.008774
	Porto	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	0.006940
	Sevilla	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	0.000000
	Thiva	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	0.000020

Table 8.8-8: PEC$_{gw}$ for acetamiprid and metabolites on Winter Cereals (with FOCUS PEARL v5.5.5) for metabolite IM-1-5 with PUF = 0.0

Crop	Scenario	80th Percentile PEC$_{gw}$ at 1 m Soil Depth (µg/L)	
		Acetamiprid	IM-1-5 For PUF = 0.0
Winter cereals	Châteaudun	< 0.001	0.0011
	Hamburg	< 0.001	0.0162
	Jokioinen	< 0.001	0.0000
	Kremsmünster	< 0.001	0.0117
	Okehampton	< 0.001	0.0186
	Piacenza	< 0.001	0.0114
	Porto	< 0.001	0.0083

	Sevilla	< 0.001	0.0000
	Thiva	< 0.001	0.0000

Table 8.8-~~6~~9: PEC$_{gw}$ for acetamiprid and metabolites on Winter cereals (with FOCUS PELMO 5.5.3)

Crop	Scenario	80[th] Percentile PEC$_{gw}$ at 1 m Soil Depth (µg/L)				
		Acetamiprid	IM-1-2	IM-1-4	IC-0	IM-1-5 For PUF = 0.5
~~Sugar beets~~ Winter cereals	Châteaudun	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	0.001
	Hamburg	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	0.023
	Jokioinen	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	0.000
	Kremsmünster	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	0.019
	Okehampton	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	0.045
	Piacenza	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	0.022
	Porto	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	0.024
	Sevilla	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	0.000
	Thiva	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	0.000

Table 8.8-10: PEC$_{gw}$ for acetamiprid and metabolites on Winter cereals (with FOCUS PELMO 5.5.3)

Crop	Scenario	80[th] Percentile PEC$_{gw}$ at 1 m Soil Depth (µg/L)	
		Acetamiprid	IM-1-5 For PUF = 0.0
Winter cereals	Châteaudun	< 0.001	0.001
	Hamburg	< 0.001	0.027
	Jokioinen	< 0.001	0.000
	Kremsmünster	< 0.001	0.025
	Okehampton	< 0.001	0.059
	Piacenza	< 0.001	0.022
	Porto	< 0.001	0.030

	Sevilla	< 0.001	0.000
	Thiva	< 0.001	0.000

Table 8.8-711: PEC$_{gw}$ for acetamiprid and metabolites on Sugar beets (with FOCUS PEARL 4.4.4)

Crop	Scenario	80th Percentile PEC$_{gw}$ at 1 m Soil Depth (µg/L)				
		Acetamiprid	IM-1-2	IM-1-4	IC-0	IM-1-5 For PUF = 0.5
Sugar beets	Châteaudun	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	0.094182
	Hamburg	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	0.071507
	Jokioinen	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	0.000041
	Kremsmünster	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	0.053142
	Okehampton	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	0.076162
	Piacenza	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	0.058513
	Porto	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	0.048286
	Sevilla	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	0.001713
	Thiva	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001	0.031088

Table 8.8-12: PEC$_{gw}$ for acetamiprid and metabolites on Sugar beets (with FOCUS PEARL v5.5.5) for metabolite IM-1-5 with PUF = 0.0

Crop	Scenario	80th Percentile PEC$_{gw}$ at 1 m Soil Depth (µg/L)		
		Acetamiprid	IM-1-5 For PUF = 0.0 Every year	IM-1-5 For PUF = 0.0 Every 2 years
Sugar beets	Châteaudun	< 0.001	**0.1366**	0.0597
	Hamburg	< 0.001	0.0972	0.0493
	Jokioinen	< 0.001	0.0000	0.0085
	Kremsmünster	< 0.001	0.0719	0.0341
	Okehampton	< 0.001	0.0919	0.0401
	Piacenza	< 0.001	0.0800	0.0363
	Porto	< 0.001	0.0612	0.0264

	Sevilla	< 0.001	0.0076	0.0049
	Thiva	< 0.001	0.0614	0.0278

Table 8.8-~~8~~13: PEC$_{gw}$ for acetamiprid and metabolites on sugar beets (with FOCUS PELMO 5.5.3)

Crop	Scenario	80th Percentile PEC$_{gw}$ at 1 m Soil Depth (µg/L)				
		Acetamiprid	IM-1-2	IM-1-4	IC-0	IM-1-5 For PUF = 0.5
Sugar beets	Châteaudun	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	0.063
	Hamburg	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	0.054
	Jokioinen	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	0.000
	Kremsmünster	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	0.047
	Okehampton	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	0.079
	Piacenza	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	0.062
	Porto	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	0.060
	Sevilla	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	0.001
	Thiva	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	~~0.000~~ < 0.001	0.014

Table 8.8-14: PEC$_{gw}$ for acetamiprid and metabolites on Sugar beets (with FOCUS PELMO 5.5.3)

Crop	Scenario	80th Percentile PEC$_{gw}$ at 1 m Soil Depth (µg/L)	
		Acetamiprid	IM-1-5 For PUF = 0.0
Sugar beets	Châteaudun	< 0.001	0.093
	Hamburg	< 0.001	0.067
	Jokioinen	< 0.001	0.000
	Kremsmünster	< 0.001	0.058
	Okehampton	< 0.001	0.093
	Piacenza	< 0.001	0.077
	Porto	< 0.001	0.071

	Sevilla	< 0.001	0.002
	Thiva	< 0.001	0.028

Deltamethrin and its metabolites

Table 8.8-9: Input parameters related to active substance acetamiprid and metabolites for PEC_{gw} calculations

Compound	Deltamethrin	Br_2CA	Value in accordance with EU endpoint y/n/ Reference*
Molecular weight (g/mol)	505.2	297.97	SANCO/6504/VI/99-final 17 October 2002
Water solubility (mg/l):	0.0002 (at 25 °C)	1000	SANCO/6504/VI/99-final 17 October 2002
Saturated vapour pressure (Pa):	$1.24*10^{-8}$ (at 25 °C)	$1.*10^{-6}$	SANCO/6504/VI/99-final 17 October 2002
DT_{50} in soil (d)	21	2.3	SANCO/6504/VI/99-final 17 October 2002
DT_{50} in soil (d) lab	21	2.3	SANCO/6504/VI/99-final 17 October 2002
Transformation rate	0.0075916 per day to Br_2CA 0.036307 per day to CO_2	0.301368 per day to CO_2	SANCO/6504/VI/99-final 17 October 2002
K_{foc} (mL/g)/K_{fom}	10 240 000	26	SANCO/6504/VI/99-final 17 October 2002
1/n	0.9	0.9	SANCO/6504/VI/99-final 17 October 2002
Plant uptake factor	0	0	SANCO/6504/VI/99-final 17 October 2002
Formation fraction	-	0.23 from parent	SANCO/6504/VI/99-final 17 October 2002

* Delete row in case of no pH dependency

Table 8.8-10: PEC_{gw} for deltamethrin and metabolites on Winter oilseed rape (with FOCUS PEARL 4.4.4)

Crop	Scenario	80th Percentile PEC_{gw} at 1 m Soil Depth (µg/L)	
		Deltamethrin	Br_2CA
Winter oilseed rape	Châteaudun	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001
	Hamburg	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001
	Kremsmünster	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001
	Okehampton	~~0.000000~~	~~0.000000~~

		< 0.001	< 0.001
	Piacenza	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001
	Porto	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001

Table 8.8-11: PEC$_{gw}$ for deltamethrin and metabolites on Winter oilseed rape (with FOCUS PELMO 5.5.3)

Crop	Scenario	80th Percentile PEC$_{gw}$ at 1 m Soil Depth (µg/L)	
		Deltamethrin	Br_2CA
Winter oilseed rape	Châteaudun	~~0.000~~ < 0.001	~~0.000~~ < 0.001
	Hamburg	~~0.000~~ < 0.001	~~0.000~~ < 0.001
	Kremsmünster	~~0.000~~ < 0.001	~~0.000~~ < 0.001
	Okehampton	~~0.000~~ < 0.001	~~0.000~~ < 0.001
	Piacenza	~~0.000~~ < 0.001	~~0.000~~ < 0.001
	Porto	~~0.000~~ < 0.001	~~0.000~~ < 0.001

Table 8.8-12: PEC$_{gw}$ for deltamethrin and metabolites on Winter cereal (with FOCUS PEARL 4.4.4)

Crop	Scenario	80th Percentile PEC$_{gw}$ at 1 m Soil Depth (µg/L)	
		Deltamethrin	Br_2CA
Winter cereal	Châteaudun	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001
	Hamburg	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001
	Jokioinen	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001
	Kremsmünster	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001
	Okehampton	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001
	Piacenza	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001
	Porto	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001
	Sevilla	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001

	Thiva	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001

Table 8.8-13: PEC$_{gw}$ for deltamethrin and metabolites on Winter cereal (with FOCUS PELMO 5.5.3)

Crop	Scenario	80th Percentile PEC$_{gw}$ at 1 m Soil Depth (µg/L)	
		Deltamethrin	Br_2CA
Winter cereal	Châteaudun	~~0.000~~ < 0.001	~~0.000~~ < 0.001
	Hamburg	~~0.000~~ < 0.001	~~0.000~~ < 0.001
	Jokioinen	~~0.000~~ < 0.001	~~0.000~~ < 0.001
	Kremsmünster	~~0.000~~ < 0.001	~~0.000~~ < 0.001
	Okehampton	~~0.000~~ < 0.001	~~0.000~~ < 0.001
	Piacenza	~~0.000~~ < 0.001	~~0.000~~ < 0.001
	Porto	~~0.000~~ < 0.001	~~0.000~~ < 0.001
	Sevilla	~~0.000~~ < 0.001	~~0.000~~ < 0.001
	Thiva	~~0.000~~ < 0.001	~~0.000~~ < 0.001

Table 8.8-14: PEC$_{gw}$ for deltamethrin and metabolites on sugar beets (with FOCUS PEARL 4.4.4)

Crop	Scenario	80th Percentile PEC$_{gw}$ at 1 m Soil Depth (µg/L)	
		Deltamethrin	Br_2CA
Sugar beets	Châteaudun	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001
	Hamburg	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001
	Jokioinen	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001
	Kremsmünster	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001
	Okehampton	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001
	Piacenza	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001
	Porto	~~0.000000~~	~~0.000000~~

		< 0.001	< 0.001
	Sevilla	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001
	Thiva	~~0.000000~~ < 0.001	~~0.000000~~ < 0.001

Table 8.8-15: PEC_{gw} for deltamethrin and metabolites on sugar beets (with FOCUS PELMO 5.5.3)

Crop	Scenario	80th Percentile PEC_{gw} at 1 m Soil Depth (µg/L)	
		Deltamethrin	Br_2CA
Sugar beets	Châteaudun	~~0.000~~ < 0.001	~~0.000~~ < 0.001
	Hamburg	~~0.000~~ < 0.001	~~0.000~~ < 0.001
	Jokioinen	~~0.000~~ < 0.001	~~0.000~~ < 0.001
	Kremsmünster	~~0.000~~ < 0.001	~~0.000~~ < 0.001
	Okehampton	~~0.000~~ < 0.001	~~0.000~~ < 0.001
	Piacenza	~~0.000~~ < 0.001	~~0.000~~ < 0.001
	Porto	0.000	0.000
	Sevilla	0.000	0.000
	Thiva	0.000	0.000

8.9 Predicted Environmental Concentrations in surface water (PEC_{sw}) (KCP 9.2.5)

Evaluator's Comments:	The submitted PECsw and PECsed calculations were partially accepted. All used endpoints were agreed at the EU level. Calculations of PEC_{SW} for active substance and its relevant metabolites were provided in Tier 1 with PUF = 0, in accordance with LoEP, 2016. The recommended FOCUS models were used: FOCUS Step 1 & 2, Step 3 and Step 4. All used endpoints for active substances and their metabolites were agreed at the EU level. D1, D2, D6 and R2 scenarios are not relevant for Central Zone and were not taken into consideration. In Step 4 the SWAN and VFSmod models were used and accepted. **Acetamiprid**. All proposed uses were taken into consideration. The mitigation measures were proposed and they are presented in the following table: **RAC = 0.0235**

Crop	Application rate Acetamiprid g a.s./ha	No spray buffer/ vegatative buffer m	Nozzle reduction %	Max PEC_{sw} µg/l	Scenario
Winter OSR BBCH 10-21	1 x 40	10/ 15 20/20	75 50	0.007924* 0.02377*	D5 stream
Winter OSR BBCH 30-70	1 x 40	20/ 20	none	0.02355*	R3 stream
Winter cereals BBCH 37-75	1 x 40	25/ 20	50	0.01913	R3 stream
Sugar beet BBCH 12-19	1 x 40	25/ 20	none	0.01924	R3 stream

* – VFSmod values

Deltamethrin. All proposed uses were taken into consideration. The mitigation measures were proposed and they are presented in the following table:
RAC = 0.0032

Crop	Application rate Deltamethrin g a.s./ha	No spray buffer/ vegatative buffer m	Nozzle reduction %	Max PEC_{sw} µg/l	Scenario
Winter OSR BBCH 10-21	1 x 4.8	10/ 10	50	0.02274	D5 stream
Winter OSR BBCH 30-70	1 x 4.8	20/ 20	50	0.01785	R3 stream
Winter cereals BBCH 37-75	1 x 4.8	20/ 20	50	0.01672	D5 stream
Sugar beet BBCH 12-19	1 x 4.8	85/ –	–	0.02023	R3 stream
		60/ –	50	0.02332	
		45/ –	75	0.02332	
		30/ –	90	0.01715	

Poland. National Assessment.
In Step 3 and Step 4 it is obligatory to submit the PECsw/sed assessment for relevant scenarios D3, D4 and R1.

The max PECsw for Poland with relevant mitigation measure are presented in the table below.

Crop	Application rate g a.s./ha	No spray buffer/ vegatative buffer m	Nozzle reduction %	Max PEC_{sw} µg/l	Scenario
Winter OSR	1 x 40 A	20/ 20		0.02019	D4 stream

BBCH 10-21 BBCH 30-70*	1 x 4.8 D			0.002354	D4 stream
Winter cereals BBCH 37-75	1 x 40 A	20/ 20		0.01945	D4 stream
	1 x 4.8 D			0.002120	D3 ditch
Sugar beet BBCH 12-19	1 x 40 A	20/ 20		0.01982	D4 stream
	1 x 4.8 D			0.002121	D3 ditch

* – the earlier growth stage covers the later one.

ZRMS is of the opinion, that relevant mitigation measures will be considered at the Member State level.

Formulation. Taking into consideration the drift form formulation use, the following non-spray buffer strips were proposed. The drift exposure was reassessed by evaluator using the Drift Calculator in SWASH model:
The relevant PECsw are presented in the table below.
RAC = 10.6

Crop	Application rate mL/ha	Application rate [prod]/ha	No spray buffer (m)	Max PEC_{sw} (µg/l)
Winter OSR	160	173.6	1	1.1153
Winter cereals	160	173.6	1	1.1153
Sugar beet	160	173.6	1	1.1153

Based on phys-chem section the density of 1.085 g/mL was taken into consideration.

The relevant mitigation measure will be recommended in ecotoxicological section.

8.9.1 Justification for new endpoints

No new endpoints required, all endpoints were taken from EFSA Journal 2016;14(11):4610 and SANCO/6504/VI/99-final 17 October 2002

8.9.2 Active substance(s), relevant metabolite(s) and the formulation (KCP 9.2.5)

The values presented below are intended for the worst case scenario calculations.

Table 8.9-1: Input parameters related to application for $PEC_{SW/SED}$ calculations

Plant protection product	CHR/I/ADEL 280 SC	CHR/I/ADEL 280 SC	CHR/I/ADEL 280 SC
Use No.			
Crop	Winter oilseed rape	Winter cereals	Sugar beets
Application rate (kg as/ha)	Acetamiprid 0.04 Deltamethrin 0.0048	Acetamiprid 0.04 Deltamethrin 0.0048	Acetamiprid 0.04 Deltamethrin 0.0048
Number of applications/interval (d)	1/-	1/-	1/-

Application window	June-Sep	March-May	March-May
Application method	spray	spray	spray
CAM (Chemical application method)	Application foliar linear	Application foliar linear	Application foliar linear
Soil depth (cm)	5	5	5
Models used for calculation	FOCUS SWASH v5.3, FOCUS PRZM v4.3.1, FOCUS MACRO v5.5.4, FOCUS TOXWA v4.4.3	FOCUS SWASH v5.3, FOCUS PRZM v4.3.1, FOCUS MACRO v5.5.4, FOCUS TOXWA v4.4.3	FOCUS SWASH v5.3, FOCUS PRZM v4.3.1, FOCUS MACRO v5.5.4, FOCUS TOXWA v4.4.3

Table 8.9-2: FOCUS Step 3 Scenario related input parameters for PEC$_{sw/sed}$ calculations for the application of CHR/I/ADEL 280 SC

Crop	Scenario	Application window used in modelling
Winter oilseed rape	D3	3 Septmeber – 4 October (Day 246-276)
	D4	4 Septmeber – 4 October (Day 247 -277)
	D5	21 Septmeber – 21 October (Day 264-294)
	R1	5 September – 5 October (Day 248-278)
	R3	6 October – 5 November (Day 279-309)

Table 8.9-3: FOCUS Step 3 Scenario related input parameters for PEC$_{sw/sed}$ calculations for the application of CHR/I/ADEL 280 SC

Crop	Scenario	Application window used in modelling
Winter cereals	D3	9 May – 8 June (Day 129 – 159)
	D4	9 April – 9 May (Day 99-129)
	D5	29 March – 28 April (Day 88-118)
	D6	26 February – 28 March (Day 57-87)
	R1	5 May – 4 June (Day 125-155)
	R3	31 March – 30 April (90-120)
	R4	19 February – 21 March (50-80)

Table 8.9-4: FOCUS Step 3 Scenario related input parameters for PEC$_{sw/sed}$ calculations for the application of CHR/I/ADEL 280 SC

Crop	Scenario	Application window used in modelling
Sugar beets	D3	5 May – 4 June (Day 125-155)
	D4	13 May – 12 June (Day 133-163)
	R1	26 April – 26 May (Day 116-146)
	R3	31 March – 30 April (Day 90-120)

8.9.2.1 Acetamiprid and its metabolites

Table 8.9-5: Input parameters related to active substance Acetamiprid and metabolite(s) for $PEC_{sw/sed}$ calculations STEP 1/2 and 3(/4)

Compound	Acetamiprid	IM-1-2	IM-1-4	IC-0	IM-1-5	IB-1-1	Value in accordance to EU endpoint y/n/ Reference
Molecular weight (g/mol)	222.68	240.69	156.61	157.55	197.66	204.23	EFSA Journal 2016;14(11):4610
Saturated vapour pressure (Pa)	$1*10^{-6}$	$1*10^{-8}$	$1*10^{-8}$	$1*10^{-8}$	$1*10^{-8}$	$1*10^{-8}$	EFSA Journal 2016;14(11):4610
Water solubility (mg/L)	2950	$1*10^{6}$	$1*10^{6}$	$1*10^{6}$	$1*10^{6}$	$1*10^{6}$	EFSA Journal 2016;14(11):4610
Diffusion coefficient in water (m^2/d)	4.3×10^{-5}	4.3×10^{-5}	4.3×10^{-5}	4.3×10^{-5}	4.3×10^{-5}	4.3×10^{-5}	default
Diffusion coefficient in air (m^2/d)	0.43	0.43	0.43	0.43	0.43	0.43	default
K_{foc} (mL/g)	106.5	54	171	122	325	0	EFSA Journal 2016;14(11):4610
Freundlich Exponent 1/n	0.86	0.9	0.764	0.953	0.886	1	EFSA Journal 2016;14(11):4610
Plant Uptake	0	0	0	0	0	0	EFSA Journal 2016;14(11):4610
Wash-Off factor from Crop (1/mm)	0.05 (MACRO) 0.50 (PRZM)	0.05 (MACRO) 0.50 (PRZM)	0.05 (MACRO) 0.50 (PRZM)	0.05 (MACRO) 0.50 (PRZM)	0.05 (MACRO) 0.50 (PRZM)	0.05 (MACRO) 0.50 (PRZM)	EFSA Journal 2016;14(11):4610
$DT_{50,soil}$ (d)	1.45 (geomean, normalisation to 10 kPa or pF2, 20 °C with Q_{10} of 2.58 Walker equation coefficient 0.7)	1.7 (normalisation to 10kPa or pF2, 20 °C with Q10 of 2.58 and Walker equation coefficient 0.7).	17.6 (normalisation to 10kPa or pF2, 20 °C with Q10 of 2.58 and Walker equation coefficient 0.7)	2.7 (normalisation to 10kPa or pF2, 20 °C with Q10 of 2.58 and Walker equation coefficient 0.7).	495 (normalisation to 10kPa or pF2, 20 °C with Q10 of 2.58 and Walker equation coefficient 0.7)	1000	EFSA Journal 2016;14(11):4610

Compound	Acetamiprid	IM-1-2	IM-1-4	IC-0	IM-1-5	IB-1-1	Value in accordance to EU endpoint y/n/ Reference
$DT_{50,water}$ (d)	27	1000	1000	1000	1000	1000	EFSA Journal 2016;14(11):4610
$DT_{50,sed}$ (d)	27 (step 1 step 2) 1000 step 3	1000	1000	1000	1000	1000	EFSA Journal 2016;14(11):4610
$DT_{50,whole\ system}$ (d)	27	1000	1000	1000	1000	1000	EFSA Journal 2016;14(11):4610
Maximum occurrence observed (% molar basis with respect to the parent)	-	Soil: 55% Water and Sediment Total system: 13.4%	Soil: 72% Water and Sediment Total system: 81.5%	Soil: 11.3% Water and Sediment Total system: 29.5%	Soil: 20% Water and Sediment Total system: 0	Soil: 0 Water and Sediment Total system: 35%	EFSA Journal 2016;14(11):4610

$PEC_{sw/sed}$

Table 8.9-6: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for acetamiprid following single application(s) of CHR/I/ADEL 280 SC to winter oilseed rape in BBCH 10-21

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	21 d- $PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*
Step 1	---	12.04	Run off/ drainage	9.28	12.45
Step 2					
Northern Europe	June-Sep	0.51	Run off/ drainage	0.39	
Step 3					
D3	ditch	0.2565	drainage	0.1322	0.2707
D4	pond	0.008786	drainage	0.006889	0.01941
D4	stream	0.2191	drainage	0.003022	0.03306
D5	pond	0.008787	drainage	0.006763	0.01896
D5	stream	0.2364	drainage	0.004334	0.04281
R1	pond	0.008780	Run off	0.006741	0.01874
R1	stream	0.1675	Run off	0.001681	0.02031
R3	stream	0.2294	Run off	0.003407	0.02224

* single applications should be marked.
** twa-time as required by ecotox

FOCUS Step 4

Table 8.9-7: Global maximum PEC_{sw} values for acetamiprid, following single application(s) of CHR/I/ADEL 280 SC to winter oilseed rape according to the central EU zone GAP according to surface water Step 4 using VFS model in BBCH 10-21

PEC_{sw} (µg/L)	Scenario	STEP 4 acetamiprid						
Nozzle reduction	Vegetative strip (m)	10	10	10	10	20	10	20
	No spray buffer (m)	1/3	5	10	15	20	10	20
None	D3 ditch							
50 %						0.01929		
75 %				0.03692	0.006320	0.004657		
90 %								
None	D4 stream							
50 %						0.02204		
75 %				0.04247	0.007345	0.005429		
90 %								
None	D5 stream							
50 %						0.02377		
75 %				0.04582	0.007924	0.005857		
90 %								
None	R1 stream							
50 %						0.01685		
75 %				0.03248	0.005615	0.004150		
90 %								
None	R3 stream							
50 %						0.02307		
75 %				0.04447	0.007690	0.005684		
90 %								

Table 8.9-6: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for acetamiprid following single application(s) of CHR/I/ADEL 280 SC to winter oilseed rape in BBCH 30-70

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	21 d- $PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*
Step 1	---	12.04	Run off/ drainage	9.28	12.45
Step 2					
Northern	March-May	0.41	Run off/ drainage	0.31	0.41

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	21 d- $PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*
Europe					
Step 3					
D3	ditch	0.2529	drainage	0.01002	0.06874
D4	pond	0.008781	drainage	0.007359	0.02191
D4	stream	0.2007	drainage	0.000603	0.008743
D5	pond	0.008780	drainage	0.007165	0.02082
D5	stream	0.2018	drainage	0.000353	0.005359
R1	pond	0.008780	Run off	0.007258	0.02287
R1	stream	0.1666	Run off	0.005661	0.03698
R3	stream	0.2616	Run off	0.009931	0.07093
Step 4	20 meters vegetative buffer zone and 20 meters no-spray buffer zone using vfs mode				
D3	Ditch	0.01902	drainage	0.000753	0.005987
D4	pond	0.003592	drainage	0.002999	0.009481
D4	stream	0.02019	drainage	0.000061	0.000910
D5	pond	0.003591	drainage	0.002920	0.009008
D5	stream	0.02029	drainage	0.000036	0.000551
R1	pond	0.003591	Run off	0.002839	0.007997
R1	stream	0.01675	Run off	0.000141	0.001894
R3	stream	0.02355	Run off	0.000305	0.003631

Metabolites of Acetamiprid

Table 8.9-8: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for IM-1-2 following single application(s) of CHR/I/ADEL 280 SC to winter oilseed rape in BBCH 10-21.

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	21 d- $PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*
Step 1	---	9.25	Run off / drainage	9.18	4.99
Step 2					
Northern Europe	March-May	0.26	Run off / drainage	0.25	0.14

Table 8.9-9: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for IM-1-4 following single application(s) of CHR/I/ADEL 280 SC to winter oilseed rape in BBCH 10-21.

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	21 d- $PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*
Step 1	---	11.93	Run off / drainage	11.81	20.32
Step 2					
Northern Europe	June-Sep	0.86	Run off / drainage	0.84	1.44

Table 8.9-10: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for IC-0 following single application(s) of CHR/I/ADEL 280 SC to winter oilseed rape in BBCH 10-21.

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	21 d- $PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*
Step 1	---	3.39	Run off / drainage	3.35	4.12
Step 2					
Northern Europe	June-Sep	0.15	Run off / drainage	0.15	0.18

Table 8.9-11: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for IM-1-5 following single application(s) of CHR/I/ADEL 280 SC to winter oilseed rape in BBCH 10-21.

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	21 d- $PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*
Step 1	---	1.65	Run off / drainage	1.64	5.37
Step 2					
Northern Europe	June-Sep	0.2	Run off / drainage	0.2	0.64

Table 8.9-12: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for IB-1-1 following single application(s) of CHR/I/ADEL 280 SC to winter oilseed rape in BBCH 10-21.

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	21 d- $PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*
Step 1	---	4.40	Run off / drainage	4.37	0
Step 2					

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	21 d- $PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*
Northern Europe	June-Sep	0.19	Run off / drainage	0.19	0

Table 8.9-8: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for IM-1-2 following single application(s) of CHR/I/ADEL 280 SC to winter oilseed rape in BBCH 30-70.

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	21 d- $PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*
Step 1	---	9.25	Run off / drainage	9.18	4.99
Step 2					
Northern Europe	March-May	0.13	Run off / drainage	0.13	0.07

Table 8.9-9: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for IM-1-4 following single application(s) of CHR/I/ADEL 280 SC to winter oilseed rape in BBCH 30-70.

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	21 d- $PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*
Step 1	---	11.93	Run off / drainage	11.81	20.32
Step 2					
Northern Europe	March-May	0.52	Run off / drainage	0.50	0.87

Table 8.9-10: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for IC-0 following single application(s) of CHR/I/ADEL 280 SC to winter oilseed rape in BBCH 30-70 .

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	21 d- $PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*
Step 1	---	3.39	Run off / drainage	3.35	4.12
Step 2					
Northern Europe	March-May	0.11	Run off / drainage	0.11	0.13

Table 8.9-11: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for IM-1-5 following single application(s) of CHR/I/ADEL 280 SC to winter oilseed rape in BBCH 30-70.

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	21 d- $PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*
Step 1	---	1.65	Run off / drainage	1.64	5.37
Step 2					
Northern Europe	March-May	0.10	Run off / drainage	0.10	0.32

Table 8.9-12: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for IB-1-1 following single application(s) of CHR/I/ADEL 280 SC to winter oilseed rape in BBCH 30-70 .

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	21 d- $PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*
Step 1	---	4.40	Run off / drainage	4.37	0
Step 2					
Northern Europe	March-May	0.16	Run off / drainage	0.15	0

Table 8.9-13: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for acetamiprid following single application(s) of CHR/I/ADEL 280 SC to winter cereal.

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	21 d- $PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*
Step 1	---	12.04	Run off / drainage	9.28	12.45
Step 2					
Northern Europe	March-May	0.58	Run off / drainage	0.44	0.59
Step 3					
D3	ditch	0.2537	drainage	0.01372	0.08090
D4	pond	0.008780	drainage	0.007261	0.02030
D4	stream	0.1934	drainage	0.000430	0.006500
D5	pond	0.008780	drainage	0.007190	0.02028
D5	stream	0.2022	drainage	0.000360	0.005463
D6	ditch	0.2506	drainage	0.005432	0.04771
R1	pond	0.008780	Run off	0.007090	0.02167
R1	stream	0.1668	Run off	0.003935	0.02106
R3	stream	0.2344	Run off	0.003126	0.03425
R4	stream	0.1676	Run off	0.001673	0.02049

* single applications should be marked.
** twa-time as required by ecotox

FOCUS Step 4

Table 8.9-14: Global maximum PEC_{sw} values for acetamiprid, following single application(s) of CHR/I/ADEL 280 SC to winter cereals according to the central EU zone GAP according to surface water Step 4

PEC_{sw} (µg/L)	Scenario	STEP 4 acetamiprid						
Nozzle reduction	Vegetative strip (m)	None	None	None	20	20	10	20
	No spray buffer (m)	1/3	5	10	20	25	10	20
None	D3 ditch				0.01908	0.01546		
50 %								
75 %								
90 %								
None	D4 stream				0.01945	0.01579		
50 %								
75 %								
90 %								
None	D5 stream				0.02033	0.01650		
50 %								
75 %								
90 %								
None	R1 stream				0.01678	0.01675		
50 %								
75 %								
90 %								
None	R3 stream				0.02357	0.01913		
50 %								
75 %								
90 %								
None	D6 Ditch				0.01887	0.01530		
50 %								
75 %								
90 %								
None	R4 stream				0.01685	0.01368		
50 %								
75 %								

PEC_{sw} (µg/L)	Scenario	STEP 4 acetamiprid						
Nozzle reduction	Vegetative strip (m)	None	None	None	20	20	10	20
	No spray buffer (m)	1/3	5	10	20	25	10	20
90 %								

Metabolites of Acetamiprid

Table 8.9-15: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for IM-1-2 following single application(s) of CHR/I/ADEL 280 SC to winter cereals.

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	21 d- $PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*
Step 1	---	9.25	Run off / drainage	9.18	4.99
Step 2					
Northern Europe	March-May	0.32	Run off / drainage	0.32	0.17

Table 8.9-16: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for IM-1-4 following single application(s) of CHR/I/ADEL 280 SC to winter cereals.

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	21 d- $PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*
Step 1	---	11.93	Run off / drainage	11.81	20.32
Step 2					
Northern Europe	March-May	1.08	Run off / drainage	1.06	1.83

Table 8.9-17: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for IC-0 following single application(s) of CHR/I/ADEL 280 SC to winter cereals.

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	21 d- $PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*
Step 1	---	3.39	Run off / drainage	3.35	4.12
Step 2					
Northern Europe	March-May	0.18	Run off / drainage	0.17	0.21

Table 8.9-18: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for IM-1-5 following single application(s) of CHR/I/ADEL 280 SC to winter cereals.

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	21 d- $PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*
Step 1	---	1.65	Run off / drainage	1.64	1.65
Step 2					
Northern Europe	March-May	0.26	Run off / drainage	0.26	0.85

Table 8.9-19: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for IB-1-1 following single application(s) of CHR/I/ADEL 280 SC to winter cereals.

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	21 d- $PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*
Step 1	---	4.40	Run off / drainage	4.37	0
Step 2					
Northern Europe	March-May	0.22	Run off / drainage	0.22	0

Table 8.9-20: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for acetamiprid following single application(s) of CHR/I/ADEL 280 SC to sugar beets

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	21 d- $PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*
Step 1	---	12.04	Run off / drainage	9.28	12.45
Step 2					
Northern Europe	March-May	0.58	Run off / drainage	0.44	0.59
Step 3					
D3	ditch	0.2100	drainage	0.01192	0.06947
D4	pond	0.008481	drainage	0.006766	0.01770
D4	stream	0.1712	drainage	0.000439	0.006553
R1	pond	0.008480	Run off	0.006745	0.01848
R1	stream	0.1450	Run off	0.001619	0.01636
R3	stream	0.2048	Run off	0.005320	0.03480

* single applications should be marked.
** twa-time as required by ecotox

FOCUS Step 4

Table 8.9-21: Global maximum PEC_{sw} values for acetamiprid, following single application(s) of CHR/I/ADEL 280 SC to sugar beets according to the central EU zone GAP according to surface water Step 4

PEC_{sw} (µg/L)	Scenario	STEP 4 acetamiprid						
Nozzle reduction	Vegetative strip (m)	10	10	10	20	20	10	20
	No spray buffer (m)	1/3	5	10	20	25	10	20
None	D3 ditch				0.01909	0.01547		
50 %								
75 %								
90 %								
None	D4 stream				0.01982	0.01609		
50 %								
75 %								
90 %								
None	R1 stream				0.01679	0.01363		
50 %								
75 %								
90 %								
None	R3 stream				0.02371	0.01924		
50 %								
75 %								
90 %								

Metabolites of Acetamiprid

Table 8.9-22: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for IM-1-2 following single application(s) of CHR/I/ADEL 280 SC to sugar beets.

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	21 d- $PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*
Step 1	---	9.25	Run off / drainage	9.18	4.99
Step 2					
Northern Europe	March-May	0.32	Run off / drainage	0.32	0.17

Table 8.9-23: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for IM-1-4 following single application(s) of CHR/I/ADEL 280 SC to sugar beets.

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	21 d- $PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*
Step 1	---	11.93	Run off / drainage	11.81	20.32
Step 2					
Northern Europe	March-May	1.08	Run off / drainage	1.06	1.83

Table 8.9-24: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for IC-0 following single application(s) of CHR/I/ADEL 280 SC to sugar beets.

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	21 d- $PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*
Step 1	---	3.39	Run off / drainage	3.35	4.12
Step 2					
Northern Europe	March-May	0.18	Run off / drainage	0.17	0.21

Table 8.9-25: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for IM-1-5 following single application(s) of CHR/I/ADEL 280 SC to sugar beets.

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	21 d- $PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*
Step 1	---	1.65	Run off / drainage	1.64	5.37
Step 2					
Northern Europe	March-May	0.26	Run off / drainage	0.26	0.85

Table 8.9-26: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for IB-1-1 following single application(s) of CHR/I/ADEL 280 SC to sugar beets.

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	21 d- $PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*
Step 1	---	4.40	Run off / drainage	4.37	0
Step 2					
Northern Europe	March-May	0.22	Run off / drainage	0.22	0

8.9.2.2 Deltamethrin and its metabolites

Table 8.9-27: Input parameters related to active substance Deltamethrin and metabolite(s) for $PEC_{sw/sed}$ calculations STEP 1/2 and 3(/4)

Compound	Deltamethrin	Br_2CA	Value in accordance to EU endpoint y/n/ Reference
Molecular weight (g/mol)	505.2	297.97	SANCO/6504/VI/99-final 17 October 2002
Saturated vapour pressure (Pa)	$1.24*10^{-8}$ (at 25 ºC)	$1*10^{-6}$	SANCO/6504/VI/99-final 17 October 2002
Water solubility (mg/L)	0.0002 (0.001 for step 3 and 4)	1000	SANCO/6504/VI/99-final 17 October 2002
Diffusion coefficient in water (m²/d)	4.3×10^{-5}	4.3×10^{-5}	SANCO/6504/VI/99-final 17 October 2002
Diffusion coefficient in air (m²/d)	0.43	0.43	default
K_{foc} (mL/g)	10240000 (30000 for step 3 and 4)	26	SANCO/6504/VI/99-final 17 October 2002
Freundlich Exponent 1/n	0.9	0.9	SANCO/6504/VI/99-final 17 October 2002
Plant Uptake	0	0	SANCO/6504/VI/99-final 17 October 2002
Wash-Off factor from Crop (1/mm)	0.05 (MACRO) 0.50 (PRZM)	0.05 (MACRO) 0.50 (PRZM)	default
$DT_{50,soil}$ (d)	21	2.3	SANCO/6504/VI/99-final 17 October 2002
$DT_{50,water}$ (d)	0.71	1000	SANCO/6504/VI/99-final 17 October 2002
$DT_{50,sed}$ (d)	65	1000	SANCO/6504/VI/99-final 17 October 2002
$DT_{50,whole\ system}$ (d)	65	1000	SANCO/6504/VI/99-final 17 October 2002
Maximum occurrence observed (% molar basis with respect to the parent)	-	Soil: 23% Water and Sediment Total system: 13%	SANCO/6504/VI/99-final 17 October 2002

Table 8.9-28: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for deltamethrin following single application(s) of CHR/I/ADEL 280 SC to winter oilseed rape in BBCH 10-21

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	21 d- $PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*
Step 1	---	0.04	Run off / drainage	0.00	12.20
Step 2					
Northern Europe	June-Sep	0.04	Run off / drainage	0.00	1.50
Step 3					
D3	ditch	0.02848	drainage	0.001261	0.01978
D4	pond	0.001005	drainage	0.000091	0.001379
D4	stream	0.02453	drainage	0.000307	0.005013
D5	pond	0.001005	drainage	0.000067	0.001020
D5	stream	0.02648	drainage	0.000410	0.006652
R1	pond	0.001004	Run off	0.000081	0.002413
R1	stream	0.01872	Run off	0.000172	0.05462
R3	stream	0.02623	Run off	0.000346	0.2240

* single applications should be marked.
** twa-time as required by ecotox

Table 8.9-29: Global maximum PEC_{sw} values for deltamethrin, following single application(s) of CHR/I/ADEL 280 SC to winter oilseed rape according to the central EU zone GAP according to surface water Step 4 in BBCH 10-21

PEC_{sw} (µg/L)	Scenario	STEP 4 deltamethrin						
Nozzle reduction	Vegetative strip (m)	10	10	10	10	20	10	20
	No spray buffer (m)	1	5	10	15	20	10	20
None	D3 ditch				0.002741	0.002128		
50 %								
75 %								
90 %								
None	D4 stream				0.003244	0.002354		
50 %								
75 %								
90 %								
None	D5 stream				0.003502	0.002541		
50 %								

PEC$_{sw}$ (µg/L)	Scenario	STEP 4 deltamethrin						
Nozzle reduction	Vegetative strip (m)	10	10	10	10	20	10	20
	No spray buffer (m)	1	5	10	15	20	10	20
75 %								
90 %								
None	R1 stream				0.002475	0.001796		
50 %								
75 %								
90 %								
None	R3 stream				0.003470	0.002517		
50 %								
75 %								
90 %								

Table 8.9-28: FOCUS Step 1,2 and 3 PEC$_{sw}$ and PEC$_{sed}$ for deltamethrin following single application(s) of CHR/I/ADEL 280 SC to winter oilseed rape in BBCH 30-70

Scenario FOCUS	Waterbody	Max PEC$_{sw}$ (µg/L)*	Dominant entry route	21 d- PEC$_{sw,twa}$ (µg/L)**	Max PEC$_{sed}$ (µg/kg)*
Step 1	---	0.04	Run off / drainage	0.00	12.20
Step 2					
Northern Europe	March-May	0.04	Run off / drainage	0.00	0.87
Step 3					
D3	Ditch	0.02829	drainage	0.0000915	0.07913
D4	pond	0.001004	drainage	0.000176	0.007223
D4	stream	0.02246	drainage	0.000066	0.02267
D5	pond	0.001004	drainage	0.000124	0.006086
D5	stream	0.02258	drainage	0.000039	0.01575
R1	pond	0.001004	Run off	0.000117	0.006119
R1	stream	0.01862	Run off	0.000153	0.06232
R3	stream	0.02622	Run off	0.000326	0.05375
Step 4	20 meters vegetative buffer zone and 20 meters no-spray buffer zone				
D3	Ditch	0.002113	drainage	0.000068	0.006486
D4	pond	0.000362	drainage	0.000063	0.002708
D4	stream	0.002155	drainage	0.000006	0.002326

Scenario FOCUS	Waterbody	Max PEC$_{sw}$ (µg/L)*	Dominant entry route	21 d- PEC$_{sw,twa}$ (µg/L)**	Max PEC$_{sed}$ (µg/kg)*
D5	pond	0.000362	drainage	0.000044	0.002286
D5	stream	0.002166	drainage	0.000004	0.001563
R1	pond	0.000362	Run off	0.000042	0.002298
R1	stream	0.001785	Run off	0.000015	0.003675
R3	stream	0.002516	Run off	0.000033	0.005652

Table 8.9-30: FOCUS Step 1,2 and 3 PEC$_{sw}$ and PEC$_{sed}$ for Br_2CA following single application of CHR/I/ADEL 280 SC to winter oil seed rape in BBCH 10-21

Scenario FOCUS	Waterbody	Max PEC$_{sw}$ (µg/L)*	Dominant entry route	21 d- PEC$_{sw,twa}$ (µg/L)**	Max PEC$_{sed}$ (µg/kg)*
Step 1	---	0.33	Run off / drainage	0.33	0.09
Step 2					
Northern Europe	June-Sep	0.02	Run off / drainage	0.02	0.01

Table 8.9-31: FOCUS Step 1,2 and 3 PEC$_{sw}$ and PEC$_{sed}$ for Br_2CA following single application of CHR/I/ADEL 280 SC to winter oil seed rape in BBCH 30-70

Scenario FOCUS	Waterbody	Max PEC$_{sw}$ (µg/L)*	Dominant entry route	21 d- PEC$_{sw,twa}$ (µg/L)**	Max PEC$_{sed}$ (µg/kg)*
Step 1	---	0.33	Run off / drainage	0.33	0.09
Step 2					
Northern Europe	March-May	0.01	Run off / drainage	0.01	0.00

Table 8.9-32: FOCUS Step 1,2 and 3 PEC$_{sw}$ and PEC$_{sed}$ for deltamethrin following single application(s) of CHR/I/ADEL 280 SC to winter cereal

Scenario FOCUS	Waterbody	Max PEC$_{sw}$ (µg/L)*	Dominant entry route	21 d- PEC$_{sw,twa}$ (µg/L)**	Max PEC$_{sed}$ (µg/kg)*
Step 1	---	0.04	Run off / drainage	0.00	12.20
Step 2					
Northern Europe	March-May	0.04	Run off / drainage	0.00	1.92
Step 3					

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	21 d- $PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*
D3	ditch	0.02839	drainage	0.000968	0.01540
D4	pond	0.001004	drainage	0.000180	0.002329
D4	stream	0.02164	drainage	0.000048	0.000783
D5	pond	0.001004	drainage	0.000130	0.001673
D5	stream	0.02262	drainage	0.000040	0.000654
D6	ditch	0.02803	drainage	0.000521	0.008464
R1	pond	0.001004	Run off	0.000103	0.004906
R1	stream	0.01858	Run off	0.000166	0.1097
R3	stream	0.02641	Run off	0.000410	0.05586
R4	stream	0.01873	Run off	0.000212	0.1247

* single applications should be marked.
** twa-time as required by ecotox

FOCUS Step 4

Table 8.9-33: Global maximum PEC_{sw} values for deltamethrin, following single application(s) of CHR/I/ADEL 280 SC to winter cereals according to the central EU zone GAP according to surface water Step 4

PEC_{sw} (µg/L)	Scenario	STEP 4 deltamethrin						
Nozzle reduction	Vegetative strip (m)	10	10	10	10	20	10	20
	No spray buffer (m)	1	5	10	15	20	10	20
None	D3 ditch				0.002732	0.002120		
50 %								
75 %								
90 %								
None	D4 stream				0.002861	0.002076		
50 %								
75 %								
90 %								
None	D5 stream				0.002992	0.002170		
50 %								
75 %								
90 %								
None	R1 stream				0.002456	0.001781		
50 %								

PEC_{sw} (µg/L)	Scenario	STEP 4 deltamethrin						
Nozzle reduction	Vegetative strip (m)	10	10	10	10	20	10	20
	No spray buffer (m)	1	5	10	15	20	10	20
75 %								
90 %								
None	R3 stream				0.003493	0.002534		
50 %								
75 %								
90 %								
None	R4 stream				0.002476	0.001796		
50 %								
75 %								
90 %								
None	D6 ditch				0.002697	0.002094		
50 %								
75 %								
90 %								

Table 8.9-34: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for Br_2CA following single application of CHR/I/ADEL 280 SC to winter cereal.

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	21 d- $PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*
Step 1	---	0.33	Run off / drainage	0.33	0.09
Step 2					
Northern Europe	March-May	0.03	Run off / drainage	0.03	0.01

Table 8.9-35: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for deltamethrin following single application(s) of CHR/I/ADEL 280 SC to sugar beets

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	21 d- $PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*
Step 1	---	0.04	Run off / drainage	0.00	12.20
Step 2					
Northern Europe	March-May	0.04	Run off / drainage	0.00	1.92

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	21 d- $PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*
Step 3					
D3	ditch	0.02374	drainage	0.000821	0.01306
D4	pond	0.000912	drainage	0.000099	0.001488
D4	stream	0.01908	drainage	0.000048	0.000790
R1	pond	0.000912	Run off	0.000115	0.004373
R1	stream	0.01614	Run off	0.000139	0.09295
R3	stream	0.02284	Run off	0.000363	0.04916

* single applications should be marked.
** twa-time as required by ecotox

FOCUS Step 4

Table 8.9-36: Global maximum PEC_{sw} values for deltamethrin, following single application(s) of CHR/I/ADEL 280 SC to sugar beets according to the central EU zone GAP according to surface water Step 4

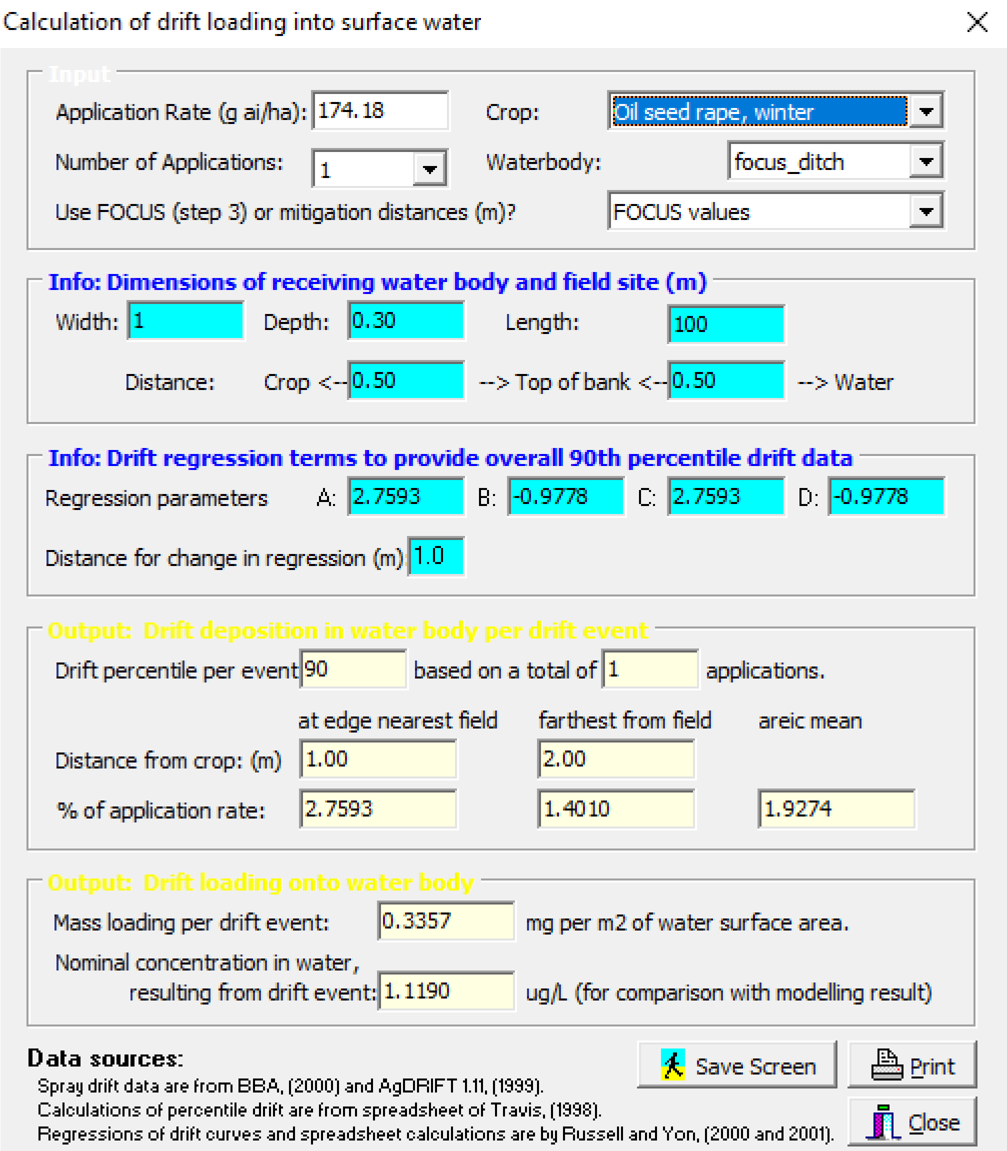
PEC_{sw} (µg/L)	Scenario	STEP 4 deltamethrin						
Nozzle reduction	Vegetative strip (m)	10	10	10	10	20	10	20
	No spray buffer (m)	1	5	10	15	20	10	20
None	D3 ditch				0.002732	0.002121		
50 %								
75 %								
90 %								
None	D4 stream				0.002916	0.002116		
50 %								
75 %								
90 %								
None	R1 stream				0.002467	0.001790		
50 %								
75 %								
90 %								
None	R3 stream				0.003493	0.002534		
50 %								
75 %								
90 %								

Table 8.9-37: FOCUS Step 1,2 and 3 PEC_{sw} and PEC_{sed} for Br_2CA following single application of CHR/I/ADEL 280 SC to sugar beets.

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	21 d- $PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*
Step 1	---	0.33	Run off / drainage	0.33	0.09
Step 2					
Northern Europe	March-May	0.03	Run off / drainage	0.03	0.01

8.9.2.3 $PEC_{sw/sed}$ of CHR/I/ADEL 280 SC

Results calculation of PECsw/sed for CHR/I/ADEL 280 SC by Drift Calculator SWASH MODEL ver 5.3 is presented below.


Calculation of drift loading into surface water

Input
Application Rate (g ai/ha): 174.18 | Crop: Oil seed rape, winter
Number of Applications: 1 | Waterbody: focus_ditch
Use FOCUS (step 3) or mitigation distances (m)? FOCUS values

Info: Dimensions of receiving water body and field site (m)
Width: 1 | Depth: 0.30 | Length: 100
Distance: Crop <-- 0.50 --> Top of bank <-- 0.50 --> Water

Info: Drift regression terms to provide overall 90th percentile drift data
Regression parameters A: 2.7593 B: -0.9778 C: 2.7593 D: -0.9778
Distance for change in regression (m) 1.0

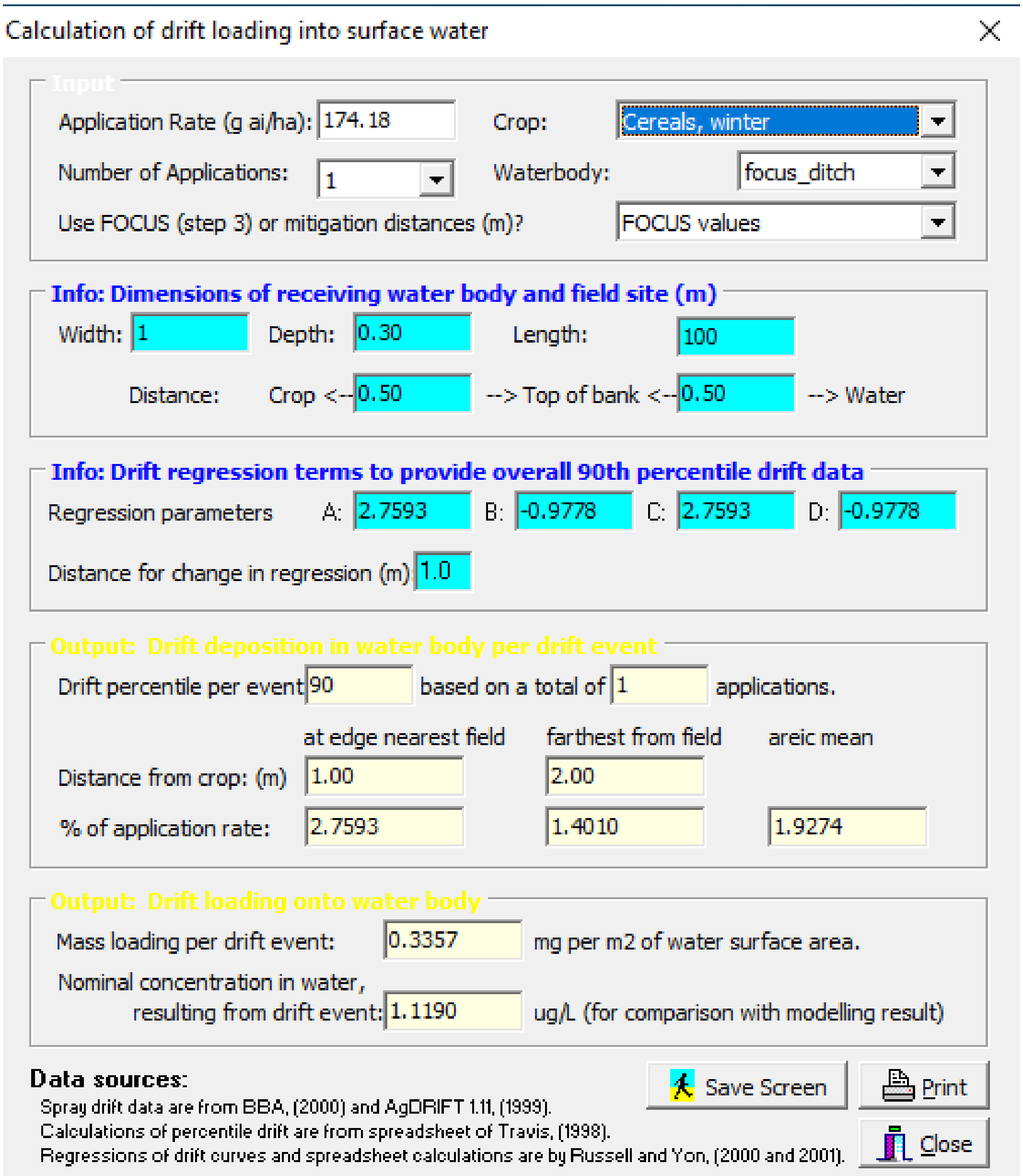
Output: Drift deposition in water body per drift event
Drift percentile per event 90 based on a total of 1 applications.

	at edge nearest field	farthest from field	areic mean
Distance from crop: (m)	1.00	2.00	
% of application rate:	2.7593	1.4010	1.9274

Output: Drift loading onto water body
Mass loading per drift event: 0.3357 mg per m2 of water surface area.
Nominal concentration in water, resulting from drift event: 1.1190 ug/L (for comparison with modelling result)

Data sources:
Spray drift data are from BBA, (2000) and AgDRIFT 1.11, (1999).
Calculations of percentile drift are from spreadsheet of Travis, (1998).
Regressions of drift curves and spreadsheet calculations are by Russell and Yon, (2000 and 2001).

Save Screen | Print | Close


Calculation of drift loading into surface water

Input

Application Rate (g ai/ha): 174.18 | Crop: Cereals, winter

Number of Applications: 1 | Waterbody: focus_ditch

Use FOCUS (step 3) or mitigation distances (m)? FOCUS values

Info: Dimensions of receiving water body and field site (m)

Width: 1 | Depth: 0.30 | Length: 100

Distance: Crop <-- 0.50 --> Top of bank <-- 0.50 --> Water

Info: Drift regression terms to provide overall 90th percentile drift data

Regression parameters A: 2.7593 B: -0.9778 C: 2.7593 D: -0.9778

Distance for change in regression (m) 1.0

Output: Drift deposition in water body per drift event

Drift percentile per event 90 based on a total of 1 applications.

	at edge nearest field	farthest from field	areic mean
Distance from crop: (m)	1.00	2.00	
% of application rate:	2.7593	1.4010	1.9274

Output: Drift loading onto water body

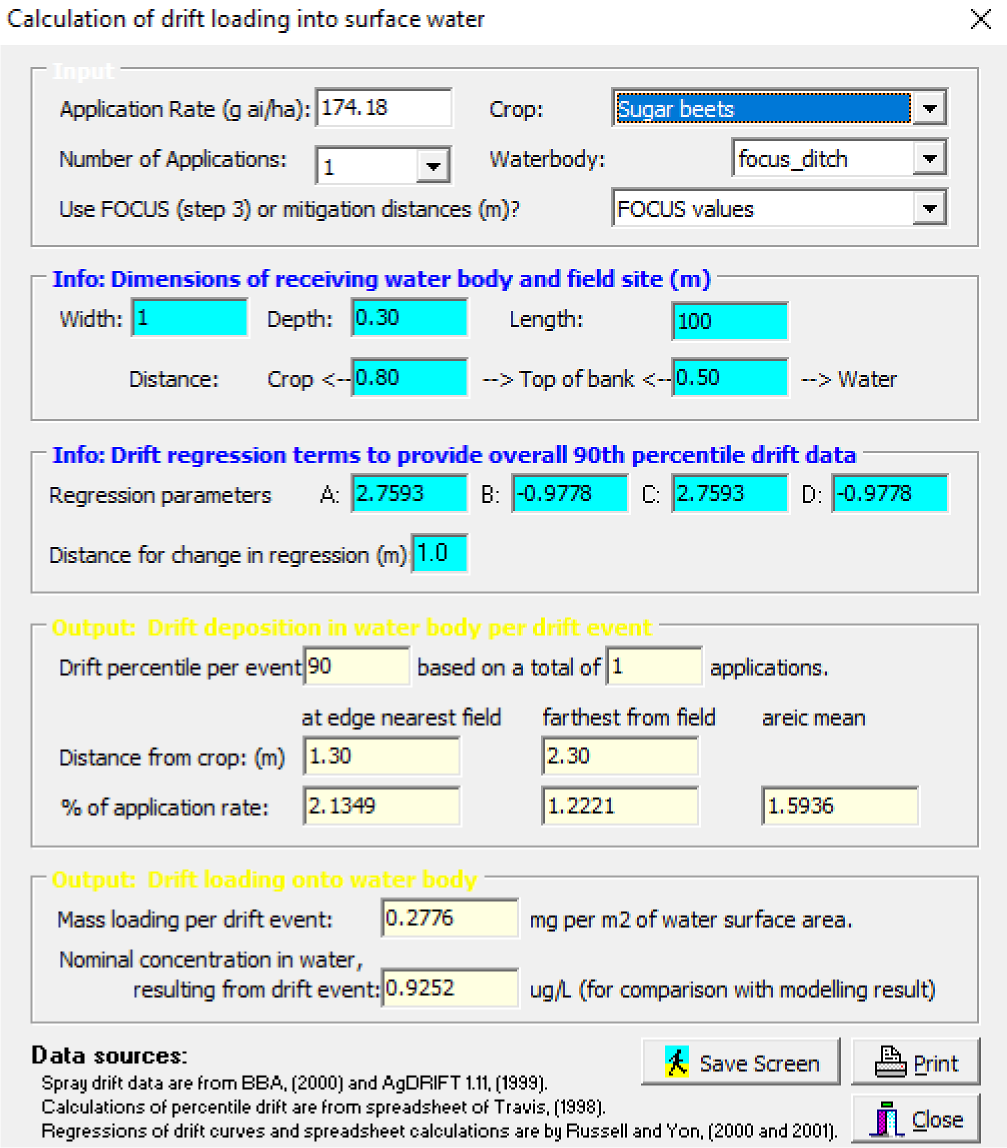
Mass loading per drift event: 0.3357 mg per m2 of water surface area.

Nominal concentration in water, resulting from drift event: 1.1190 ug/L (for comparison with modelling result)

Data sources:

Spray drift data are from BBA, (2000) and AgDRIFT 1.11, (1999).
Calculations of percentile drift are from spreadsheet of Travis, (1998).
Regressions of drift curves and spreadsheet calculations are by Russell and Yon, (2000 and 2001).

Save Screen | Print | Close



8.10 Fate and behaviour in air (KCP 9.3, KCP 9.3.1)

Table 8.10-1 Summary of atmospheric degradation and behaviour of Acetamiprid (EFSA Journal 2016;14(11):4610)

Compound	Acetamiprid
Direct photolysis in air	Not studied - no data requested
Quantum yield of direct phototransformation	-
Photochemical oxidative degradation in air	Overall rate constant:76.435 cm^3 x molecule $^{-1}$ x sec $^{-1}$ DT50 of 0.140 days, derived by the Atkinson model (version 1.70) assuming a OH (12 h) concentration of

	$1.5x10^6$ OH/cm^3
Volatilisation	Vapour pressure (Pa): 1 x 10^{-6} from plant surfaces (BBA guideline): <1% after 24 hours from soil surfaces (BBA guideline): negligible after 24 hours.
Metabolites	No data

The vapour pressure at 20 °C of the active substance acetamiprid is < 10^{-5} Pa. Hence the active substance acetamiprid is regarded as non-volatile. Therefore exposure of adjacent surface waters and terrestrial ecosystems by the acetamiprid due to volatilization with subsequent deposition is not considered.

Table 8.10-2 Summary of atmospheric degradation and behaviour of Deltamethrin (SANCO/6504/VI/99-final 17 October 2002)

Compound	Deltamethrin
Direct photolysis in air	not likely to occur (absorption max at 270 and 280 nm, very little/no absorption above 290/300 nm)
Quantum yield of direct phototransformation	data not provided, not required
Photochemical oxidative degradation in air	DT_{50} 16 h (Atkinson, AOPWIN-model)
Volatilisation	from plant surfaces over 24 hours: wind tunnels: negligible volatilization (dwarf beans and field beans) field studies: larger loss by volatilisation was indicated by indirect measurements in the field (as % loss). from soil over 24 hours: wind tunnel: negligible volatilisation field studies: larger volatilisation indicated by indirect measurements in the field (as % loss). from water: surface-sprayed (sterile): DT_{50} 2.4 hours whereof ≈70% accounted for by volatilisation subsurface injected (sterile): only little volatilization pond study, subsurface injected (10 g/ha): 10-100 ng/m3 measured above surface 36 h after application
Metabolites	No data

The vapour pressure at 20 °C of the active substance acetamiprid is < 10^{-5} Pa. Hence the active substance deltamethrin is regarded as non-volatile. Therefore exposure of adjacent surface waters and terrestrial ecosystems by the deltamethrin due to volatilization with subsequent deposition is not considered.

Appendix 1 Lists of data considered in support of the evaluation

List of data submitted by the applicant and relied on

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner

List of data submitted or referred to by the applicant and relied on, but already evaluated at EU peer review

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner
KCP 9.1.1.1	Morgenroth, U.	1997	^{14}C-NI-25: Metabolism in One Soil Incubated under Aerobic Conditions Report/file:RCC Project 373994 Amended final report Nippon Soda Doc No. RD-09624N GLP Unpublished	N	NipponSoda
KCP 9.1.1.1	Burr, C.M.	1997	[^{14}C]-NI-25: Rate of Aerobic Degradation in Three Soil Types at 20°C and One Soil Type at 10°C Report/file: RPAL Study Report 11256 Nippon Soda Doc No. RD-09962 GLP Unpublished	N	NipponSoda

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner
KCP 9.1.1.1	Simmonds M.B.	2002	[^{14}C]-Acetamiprid: Rate of Degradation in Three Calcareous Soils at 20°C Aventis CropScience SA., report C019428 Nippon Soda Doc No. RD-00168 GL GLP Unpublished	N	NipponSoda
KCP 9.1.1.1	Lowden, P., Oddy, A.M., Jones, M.K.	1997	NI-25: Rate of Degradation of the Acid Metabolite, [^{14}C]-IC-0 in Three Soils Report/file: RPAL Study Report 11257 Nippon Soda Doc No. RD-9963 GLP, Not published	N	NipponSoda
KCP 9.1.1.1	Jewkes, Y.	2014	Rate of Degradation of [14C]-IM-1-5 in Three Soils at 20°C Nippon-Soda Report No.: RD-02811 GLP Not published	N	NipponSoda
KCP 9.1.1.1	Jarvis, T. & Montesano, V	2014a	Re-calculation of laboratory anaerobic degradation rate of acetamiprid according to FOCUS (2006, 2011) guidance Exponent International Ltd., UK Nippon-Soda Report No.: RD-02910 Non-GLP Unpublished	N	NipponSoda
KCP 9.1.1.1	Burr, C.M., Doble, M.L	1997	[^{14}C]-NI-25: Anaerobic Soil Degradation Report/file: RPAL Study Report 11444 Nippon Soda Doc No. RD-09860 GLP, Not published	N	NipponSoda
KCP 9.1.2	Sugiyama, H.	2010	Adsorption / desorption study of IM-1-5 on soils Nippon Soda Co. Ltd. (NSM), Japan, Report No. NSM10-013 Document No. RD-02101 GLP Not published	N	NipponSoda

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner
KCP 9.1.2	Flückiger , J.	1997	Adsorption/Desorption of 14C-NI-25 on Five Soils Report/file:RCC Project 374016 Nippon Soda Doc No. RD-09564N GLP, Not published	N	NipponSoda
KCP 9.1.2	Mamouni, A	1997	Adsorption/Desorption of IM-1-4 on Five Soils Report/file:RCC Project 383826 Nippon Soda Doc No. RD-09567N GLP, Not published	N	NipponSoda
KCP 9.1.2	Liu, A.C.	1997	6-Chloronicotinic Acid (Acetamiprid Metabolite) Soil Adsorption/Desorption Study Report/file: RPAC Study N° EC-97-370 Nippon Soda Doc No. RD-9973 GLP, Not published	N	NipponSoda
KCP 9.1.2	Mackenz ie E. Price O.	2003	[14C]-IM-1-2 : Adsorption to and Desorption from Four Soils and One Sediment BayerCropScience SA, report C030079 Nippon Soda Doc No. RD-03056 GLP not published	N	NipponSoda
KCP 9.1.2.1	Simmonds M.	2003	[14C]-Acetamiprid: Aged Residue Column Leaching Study in Two Calcareous Soils Nippon Soda Doc No. RD-03061 GLP not published	N	NipponSoda
KCP 9.1.2.1	Morgenroth, U.	1997	14C-NI-25: Leaching Characteristics of Aged Residues in one Soil Source: Nippon Soda Generated by: RCC Umweltchemie AG Nippon Soda Doc No. RD-9566 GLP, Not published	N	NipponSoda
KCP 9.2, KCP 9.2.1, KCP 9.2.2, KCP 9.2.3	Hausma nn, S., Class, T.	1998	Aqueous Photodegradation of [14C]-Acetamiprid at pH 7 and Determination of Quantum Yield Report/file: PTRL Europe Study N° P 196 G, RPA Study N°96-82 Nippon Soda Doc No. RD-00403	N	NipponSoda

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner
			GLP, Not published		
KCP 9.2, KCP 9.2.1, KCP 9.2.2, KCP 9.2.3	McMillan -Staff, S.L., Austin, D.J.	1997	[^{14}C]-NI-25 : Degradation in Two Water/Sediment Systems. Report/file: RPAL Study 11263 Nippon Soda Doc No. RD-9968 GLP, Not published	N	NipponSoda
KCP 9.2, KCP 9.2.1, KCP 9.2.2, KCP 9.2.3	Jarvis, T. & Montesano, V.	2014c	Recalculation of acetamiprid sediment water kinetics according to FOCUS (2006, 2011) guidance Exponent International Ltd., UK Nippon-Soda Report No.: RD-02911 Non-GLP Not published	N	NipponSoda
KCP 9.2, KCP 9.2.1, KCP 9.2.2, KCP 9.2.3	Möndel, M.	2014	[pyridine-2,6- ^{14}C]-Acetamiprid: ”Aerobic Degradation in Natural Water” RLP Agroscience, Germany Nippon-Soda Report No.:RD-02800 GLP Not published	N	NipponSoda
KCP 9.3	Van der Gaauw, A.	2000	Estimation of the degradation of Acetamiprid by photo-oxidation in air, Model calculation according to Atkinson. Report/file: RCC Study No 788714 Nippon Soda Doc No. RD-00981 Non GLP, Not published	N	NipponSoda
KCP 9.1.1.2.1	Wicks, R.J.	1999	Acetamiprid : Field Soil Dissipation Study in Europe RPA Study 11258, Doc 202052 Nippon Soda Doc No. RD-9997 GLP, Not published	N	NipponSoda
KCP 9.1.1.2.1	Kellner, T.	2012a	Soil Dissipation study with Acetamiprid and its Soil Metabolite IM-1-5, in or on Soil in Spain in 2010-2011, Eurofins, Germany, Report No.: S10-01209, Document ID RD-02404 GLP, not published	N	NipponSoda

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner
KCP 9.1.1.2.1	Kellner, T	2012b	Soil Dissipation study with Acetamiprid and its Soil Metabolite IM-1-5, in or on Soil in Southern France in 2010-2011, Eurofins, Germany, Report No.: S10-01210, Document ID RD-02405 GLP, not published	N	NipponSoda
KCP 9.1.1.2.1	Kellner, T.	2012c	Soil Dissipation study with Acetamiprid and its Soil Metabolite IM-1-5, in or on Soil in Hungary in 2011-2012, Eurofins, Germany, Report No.: S10-01212, Document ID RD-02406 GLP, not published	N	NipponSoda
KCP 9.1.1.2.1	Finger, N	2013	Soil Dissipation study with Acetamiprid and its Soil Metabolite IM-1-5, in or on Soil in Hungary in 2011-2012, Eurofins, Germany, Report No.: S10-00874, Document ID RD-02599 GLP, not published	N	NipponSoda
KCP 9.1.1.1	Wang WW	1991a	Aerobic Soil Metabolism of 14C-Deltamethrin. Report No. 89097 XenoBiotic Laboratories, Inc., Princeton, NJ GLP Unpublished	N	AgrEvo
KCP 9.1.1.1	Kaufman DD, Kayser AJ, Russell B and Barnett EA	1979a	Degradation of 14C-Phenoxy- and 14C-Cyano-Decamethrin in Soil. Report No. US230479 US Dept. of Agriculture, Pesticide Degradation Laboratory, Beltsville, MD Non-GLP Unpublished	N	AgrEvo

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner
KCP 9.1.1.1	Kaufman DD, Kayser AJ, Russell B and Barnett EA	1979b	The Effect of Soil Temperature on the Degradation of 14C-Cyano-Decamethrin in Soil. Report No. US240479 US Dept. of Agriculture, Pesticide Degradation Laboratory, Beltsville, MD Non-GLP Unpublished	N	AgrEvo
KCP 9.1.1.1	Wang WW and Reynolds JL	1991a	Soil Photolysis of 14C-Deltamethrin. Report No. 90034 XenoBiotic Laboratories, Inc., Princeton, NJ GLP unpublished	N	AgrEvo
KCP 9.1.1.1	Wang WW	1991b	Anaerobic Metabolism of 14C-Deltamethrin. Report No. 89098 XenoBiotic Laboratories, Inc., Princeton, NJ GLP unpublished	N	AgrEvo
KCP 9.1.1.1	Kaufman DD, Kayser AJ, Russell B and Barnett EA	1980	Degradation of 14C-Cyano-, 14C-Phenoxy, and 14C-Vinyl Decamethrin in Flooded Soil. Report No. US120580 US Dept. of Agriculture, Pesticide Degradation Laboratory, Beltsville, MD Non-GLP Unpublished	N	AgrEvo
KCP 9.1.1.2.1 KCP 9.1.2.3	Mayasich JM and Czarnecki JJ	1991	Determination of the Dissipation and Mobility of alpha-R-, cis- and trans-deltamethrin, and Br2CA Residues in a Minnesota Corn Field. Report No. US890063 Agri-Growth Research, Inc., Hollandale, MN, and EN-CAS Analytical Labs, Winston-Salem, NC Mainly-GLP Unpublished	N	AgrEvo
	Baedelt H, Idstein H and Krebs B	1990	Deltamethrin - Emulsifiable Concentrate - 25 g/l (Code: Hoe 032640 00 ECO3 A119). Investigation of degradation in the Soil under Outdoor Conditions (in Accordance with Directive IV, 4-1 of the Federal Institute of Biology). Report No. DE44918	N	AgrEvo

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner
			Hoechst AG, Agrochemical Division, Frankfurt am Main, Germany GLP Unpublished		
KCP 9.1.2	Smith AM	1990a	Determination of the Adsorption and Desorption Coefficients of Deltamethrin. Report No. 9043311 Springborn Laboratories, Inc., Wareham, MA GLP Unpublished	N	AgrEvo
KCP 9.1.2.1	Wang WW	1991c	Adsorption and Desorption of 14C-Br2CA in Five Soils. Report No. 91061 XenoBiotic Laboratories, Inc., Princeton, NJ GLP Unpublished	N	AgrEvo
KCP 9.1.2.1	Kaufman DD, Russell BA and Kayser AJ	1980	Movement of Decamethrin, Cypermethrin, Permethrin and Selected Degradation Products in Soil. Report No. 180980 (J.Agric. Food Chem., Vol. 29, No 2, 1981) US Dept. of Agriculture, Pesticide Degradation Laboratory, Beltsville, MD Non-GLP	N	AgrEvo
KCP 9.2	Smith AM	1990b	Determination of Aqueous Hydrolysis Rate Constant and Half-Life of Deltamethrin. Report No. 9043310 Springborn Laboratories, Inc., Wareham, MA GLP Unpublished	N	AgrEvo
KCP 9.2	Devaux P	1993	Deltamethrin. Structural analysis. Elemental analysis. Infrared absorption. Circular dichromism. Ultraviolet absorption. Proton NMR. Mass spectrometry. Report No. 2043A5 Non-GLP Unpublished	N	AgrEvo

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner
KCP 9.2	Wang WW and Reynolds JL	1991b	Aqueous Photolysis of 14C-Deltamethrin. Report No. RPT0065 (US90035) XenoBiotic Laboratories, Inc., Princeton, NJ GLP Unpublished	N	AgrEvo
KCP 9.2	Bowman B and Carpenter M	1987	Determination of Photodegradation of 14C-Deltamethrin in Aqueous Solution. Report No. ABC35491 Analytical Bio-Chemistry Laboratories, Inc., Columbia, MD GLP Unpublished	N	AgrEvo
KCP 9.2	Wüthrich V	1994	Ready Biodegradability: ”Manometric Respirometry Test” for Deltamethrin. Report No. 366030 RCC Umweltchemie AG, Itingen, Switzerland GLP Unpublished	N	AgrEvo
KCP 9.2	Muttzall PI	1993	Water/Sediment Biodegradation of [benzyl-14C] Deltamethrin. Report No. 91281 TNO Institute, Delft, The Netherlands GLP Unpublished	N	AgrEvo
KCP 9.2	Muir DCG, Rawn GP, and Grift NP	1985	Fate of the Pyrethroid Insecticide Deltamethrin in Small Ponds: A Mass Balance Study. J. Agric. Food Chem. Vol. 33, No. 4, pp 603-609, 1985. Freshwater Institute, Dept. of Fisheries and Oceans, Winnipeg, Canada Non-GLP Unpublished	N	-

List of data submitted by the applicant and not relied on

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner

List of data relied on not submitted by the applicant but necessary for evaluation

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner

Appendix 2 Detailed evaluation of the new Annex II studies

Appendix 3 Additional information provided by the applicant (e.g. detailed modelling data)