Document Title

Summary of the fate and behaviour in the environment for ACL+DFF SC 600 (500 + 100 g/L)

Data Requirement(s)

Regulation (EC) No 1107/2009 & Regulation (EU) No 284/2013

Document MCP

Section 9: Fate and behaviour in the environment

According to the Guidance Document SANCO/10181/2013 for applicants on preparing dossiers for the approval of a chemical active substance

Date

2020-01-13, rev. 2020-03-11

Author(s)

[redacted]

Battelle UK Limited

M-676655-02-2

OWNERSHIP STATEMENT

This document, the data contained in it and copyright therein are owned by Bayer and/or affiliated entities. No part of the document or any information contained therein may be disclosed to any third party without the prior written authorisation of Bayer and/or affiliated entities.

The summaries and evaluations contained in this document are based on unpublished proprietary data submitted for the purpose of the assessment undertaken by the regulatory authority. Other registration authorities should not grant, amend, or renew a registration on the basis of the summaries and evaluation of unpublished proprietary data contained in this document unless they have received the data on which the summaries and evaluation are based, either:

- **from Bayer or respective affiliate; or**
- **from other applicants once the period of data protection has expired.**

Version history

Date [yyyy-mm-dd]	Data points containing amendments or additions[1] and brief description	Document identifier and version number
2020-01-13	Original version	M-676655-01-1
2020-03-11	Information on the second active susbtance diflufenican including PEC calculations for soil and surface water/sediment included as requested by the RMS.	M-676655-02-1

[1] It is suggested that applicants adopt a similar approach to showing revisions and version history as outlined in SANCO/10180/2013 Chapter 4, 'How to revise an Assessment Report'.

Table of Contents

CP 9 FATE AND BEHAVIOUR IN THE ENVIRONMENT

Aclonifen was included in Annex I to Council Directive 91/414/EEC in 2008 (Directive 2008/116/EC, Entry into Force on 01 August 2009).

Diflufenican was included on Annex I of Directive 91/414/EEC on 1 January 2009 under Inclusion Directive 2008/66/EC and implemented under Regulation (EU) No 540/2011. The Annex I Inclusion Directives for Diflufenican (2008/66/EC) provide specific provisions under Part B which need to be considered by the applicant in the preparation of their submission and by the MS prior to granting an authorisation. For the implementation of the uniform principles of Annex VI, the conclusions of the review report on Diflufenican and in particular Appendices I and II thereof, as finalised in the Standing Committee on the Food Chain and Animal Health on 14/03/2008 and on 16/06/2009, respectively, shall be taken into account.

The formulation Aclonifen + Diflufenican SC 600 (500+100 g/L) (or ACL+DFF SC 600 (500 + 100) G), is a suspension concentrate formulation containing 500 g/L of aclonifen and 100 g/L of diflufenican. This formulation is registered throughout Europe under trade names such as Mateno Duo SC 600 (Product code specification #102000029998). This formulation was not a representative product under the previous dossier submitted for Annex I inclusion.

This present dossier in support of approval renewal includes all the data submitted at the time of the Annex I inclusion, in summaries updated and re-evaluated as necessary to take account of current validity criteria and data requirements.

No laboratory studies have been conducted with the formulated product as it is possible to extrapolate from data on aclonifen. Full details of the fate and behaviour of aclonifen in soil can be found in the active substance dossier [Document MCA Section 7]. A summary of the fate in the environment is provided below.

CP 9.1 Fate and behaviour in soil

CP 9.1.1 Rate of degradation in soil

Soil degradation studies with the formulation were not performed, since it is possible to extrapolate from data obtained with the active substances.

Aclonifen

The fate and behaviour of aclonifen in soil has been investigated in a comprehensive series of laboratory studies and, when required, supported with data from field experiments. A number of studies were submitted for the first inclusion of aclonifen into Annex I of Council Directive 91/414/EEC and reviewed under uniform principles (DAR, Germany, 2006). In addition a number of new studies are provided for the current EU review. For further information on the rate of degradation in soil please refer to Document MCA, Section 7.1.2.

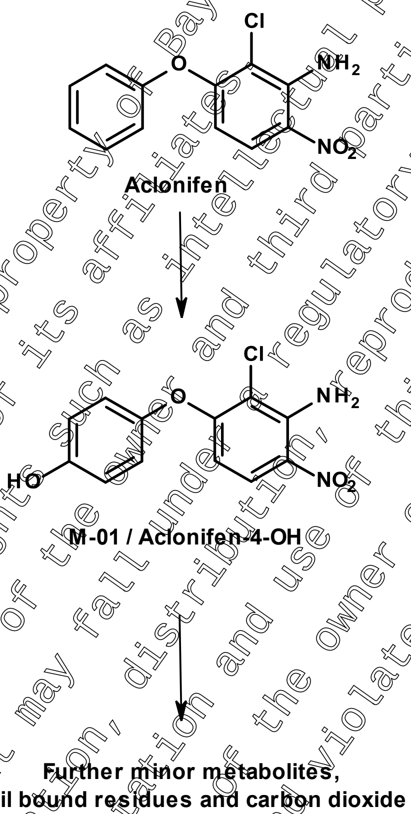
Microbial breakdown of aclonifen in soil leads to the formation of non-extractable soil bound residues, which accounted for a maximum of 20 to 58% of the applied [aniline-UL-^{14}C]-aclonifen and 42 to 71% of the applied [phenoxy-UL-^{14}C]-aclonifen, with very few intermediate products observed. Carbon dioxide was formed at maxima of between 1 to 12% AR in soil treated with the aniline label and 14 to 29% AR in soil treated the phenoxy label.

Supplemental studies have also been conducted to investigate the metabolism of aclonifen in soil under anaerobic and sterile conditions and to determine if photolysis contributed to the degradation of aclonifen on soil surfaces.

Under sterile conditions aclonifen was relatively stable confirming that its metabolism is largely microbially mediated. Non-extractable soil bound residues and material bound to aqueous soluble soil colloids were observed under sterile conditions at relatively constant levels throughout the incubation period, but at lower levels than observed in microbially viable soils, indicative of metabolites of aclonifen also binding to the soil matrix with time in microbially active soils. Aclonifen was more rapidly metabolised under flooded anaerobic conditions. Anaerobic metabolism of aclonifen led to the formation of non extractable soil residues indicating the metabolic pathway was similar to that observed under aerobic conditions. Under anaerobic conditions numerous minor unidentified metabolites were formed from the point when the redox potential in soil and water layer became reductive. The presence of light accelerated the rate of degradation on soil, with no unique metabolites formed exceeding 0.2% of applied radioactivity.

During the course of these studies, no metabolites have been observed at amounts > 5% of applied. The hydroxylated metabolite M-01 was detected in soil at a maximum of 1.5%.

Figure 9.1.1- 1: Metabolic pathway for aclonifen in soil



Diflufenican

The fate and behaviour of diflufenican in soil has been investigated in a comprehensive series of laboratory studies and, when required, supported with data from field experiments.

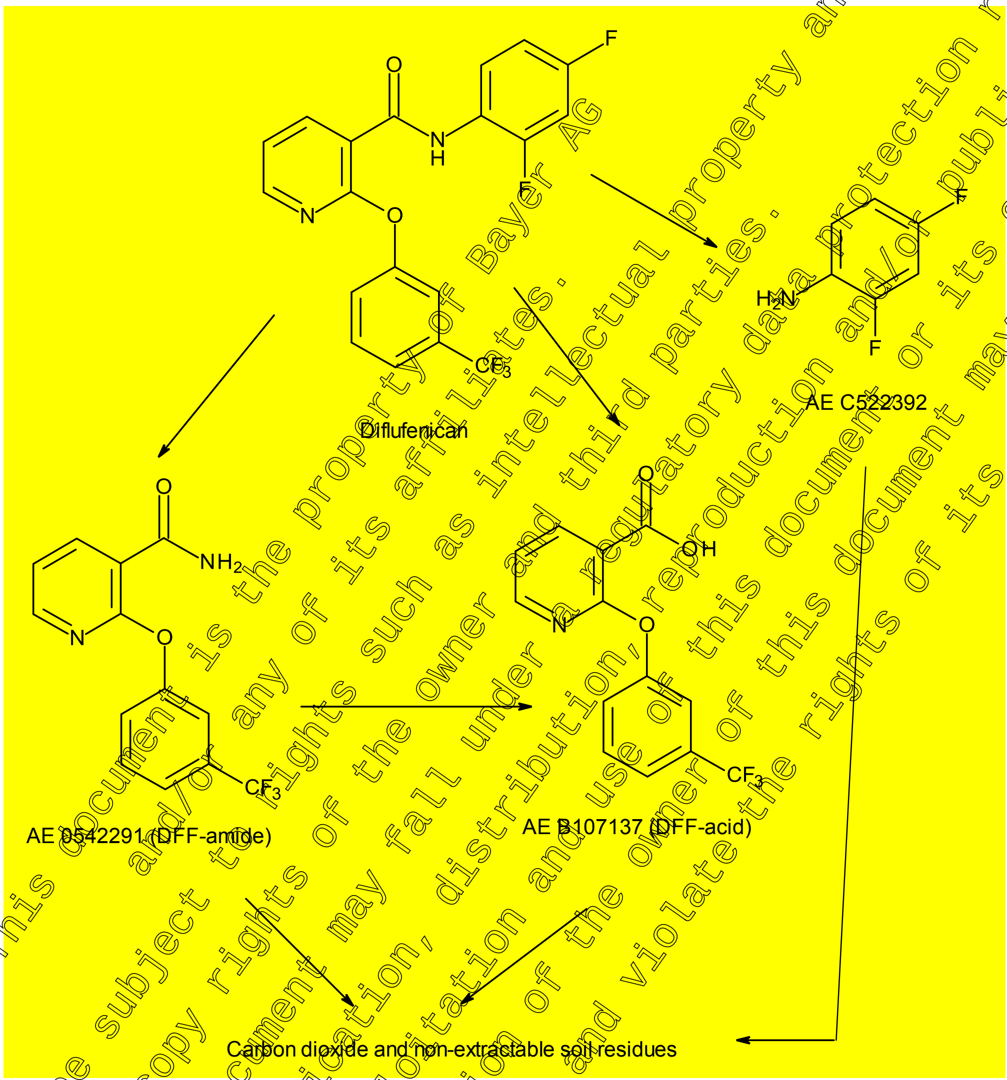
Degradation of diflufenican in aerobic soil lead to the formation of two major metabolites AE B107137 (DFF-acid) and AE 0542291 (DFF-amide) which accounted for a maximum of 16.8% and 26.3% of applied radioactivity, respectively.

Laboratory studies have consistently demonstrated that all three rings of the diflufenican structure are ultimately mineralised to carbon dioxide with up to 51% of the applied radioactivity being trapped in this form by the end of the study. Unextracted soil bound residues account for between 10 and 32% of the applied diflufenican at the end of the studies. No other metabolites have ever been detected at levels approaching 10% in aerobic soil.

Supplemental studies have also been conducted to investigate the metabolism of diflufenican in soil under anaerobic conditions and to determine if photolysis contributed to the degradation of diflufenican on soil surfaces. Anaerobic degradation of diflufenican led to the formation of AE

B107137 as a major metabolite and under prolonged anaerobic conditions AE C522392 was formed at > 10% AR in soil. Diflufenican was shown to be stable to photolysis in soil

Figure 9.1.1- 2: Metabolic pathway for diflufenican in soil



CP 9.1.1.1 Laboratory studies

Aclonifen

One of the original aerobic soil laboratory studies submitted for the first inclusion of aclonifen KCA 7.1.1.1/01 ([redacted], 1994, M-174177-02-1) is still considered valid and acceptable. In addition three new aerobic soil metabolism studies KCA 7.1.1.1/04 ([redacted], 2016, M-558848-01-1), KCA 7.1.1.1/05 ([redacted], 2019, M-674036-01-1) and KCA 7.1.1.1/06 ([redacted] P. & [redacted] D., 2019, M-674477-01-1) have been conducted to supplement the original soil studies.

A new kinetic modelling assessment of laboratory aerobic soil according to FOCUS Degradation Kinetics (2006, 2014) has been provided (KCA 7.1.2.1.1/07, [redacted] & [redacted], M-674934-01-1). Aclonifen has been found to metabolise at a moderate rate in laboratory soil studies. $DegT_{50}$ values at 20ºC ranged from 35.3 to 252.3 days with a geometric mean of 79.1 days. The results have been normalised to standard temperature and soil moisture (20°C and pF 2) according to FOCUS recommendations prior to using in FOCUS groundwater and surface water exposure assessments.

Table 9.1.1- 1: Summary of laboratory normalised DegT$_{50}$ (20 °C and pF2) values for aclonifen

Compound	Laboratory Normalised DT$_{50}$ (20 °C and pF2)		
	DegT$_{50}$ range (days)	Number of datasets (n)	Geometric mean DegT$_{50}$ (days) for exposure assessment
Aclonifen	35.3 – 252.3	12	79.1

For further information on laboratory studies please refer to Document MCA, Section 7.1.2.1.

Diflufenican

The route and rate of degradation in soil of diflufenican was evaluated during the Annex I Inclusion and was accepted by the European Commission (SANCO/3782/08 – rev. 1 – 14 March 2008).

The degradation of diflufenican was investigated in four laboratory studies at 20°C and 22°C. The data were kinetically evaluated and normalised (20°C, field capacity FC) according to FOCUS recommendations during the Annex I Inclusion (Table 9.1.1- 2). DegT$_{50}$ values at 20 to 22°C ranged from 44.3 to 237.9 days with an arithmetic mean of 141.8 days (Q_{10} = 2.2). Based on EFSA requirements, which considers a Q_{10} of 2.58 more appropriate to account for temperature dependency, the laboratory degradation data were re-normalised. The normalised arithmetic mean DegT$_{50}$ of 143.2 days (Q_{10} of 2.58) has been used in FOCUS groundwater and surface water exposure assessments.

Table 9.1.1- 2: Summary of laboratory normalised $DegT_{50}$ (20 °C and pF2) values for diflufenican

Diflufenican, Laboratory studies, aerobic conditions									
Soil name	**Soil type (USDA)**	**pH ($CaCl_2$)**	**T (°C)**	**% MWHC**	**DT_{50} (d)**	**DT_{90} (d)**	**DT_{50} (d) 20°C, pF2, Q_{10} 2.2**	**St. (r^2)**	**Kinetic model**
Sandy loam, St. Genis les Ollières, F	Sandy loam	7.7 [A]	22	75 of 0.33 bar	248.5	825.5	237.9 [F]	0.9980	SFO
Clay loam, Ongar, UK	Clay loam	6.6 [A]	22	75 of 0.33 bar	139.5	463.4	119.9 [G]	0.9967	SFO
Ongar, 99/11, UK, pyridyl label	Loam [C]	6.5	20	45	232.6	772.7	193.5	0.9954	SFO
Ongar, 99/11, UK, DFA label	Loam [C]	6.5	20	45	206.0	684.3	172.1	0.9975	SFO
Ongar, 99/11, UK, TFMP label	Loam [C]	6.5	20	45	176.3	585.8	147.3	0.9967	SFO
Royston, 00/06, UK	Clay loam [D]	7.5	20	45	44.3	147.2	44.3	0.9819	SFO
Baylham, 00/07, UK	Loamy sand [E]	5.5	20	45	129.3	429.5	129.3	0.9836	SFO
Woolverstone, 00/08, UK	Sandy loam 2	6.9	20	45	89.8	298.3	89.8	0.9890	SFO
Woolverstone, 00/08, UK	Sandy loam 2	6.9	10	45	204.4	679.0 [B]	-	-	SFO
		Arithmetic mean (n=8)					141.8 [H] (143.2 [I])		
		Geometric mean (n=8)					128		

[A] pH medium not stated
[B] calculated by Rapporteur
[C] Texture (ADAS) Clay loam
[D] Texture (ADAS) Silty clay loam
[E] Texture (ADAS) Sandy loam l
[F] DT_{50} (20°C, pF2, Q_{10} 2.58) = 245.6 days
[G] DT_{50} (20°C, pF2, Q_{10} 2.58) = 123.8 days
[H] Endpoint according to EFSA Scientific Report (2007), normalized to pF2 and 20°C using Q10 of 2.2
[I] Normalized to pF2 and 20°C using Q10 of 2.58; endpoint used in PEC calculations

The degradation of the diflufenican metabolites AE B107137 (DFF-acid) and AE 0542291 (DFF-amide) was investigated in laboratory studies at 20°C. Laboratory degradation data for the metabolites of diflufenican were kinetically evaluated and normalised (20°C, field capacity FC) according to FOCUS recommendations during the Annex I Inclusion (see Table 9.1.1- 3 and Table 9.1.1- 4).

Table 9.1.1- 3: Summary of laboratory normalised DegT$_{50}$ (20 °C and pF2) values for AE B107137 (DFF acid)

AE B107137 (DFF acid), Laboratory studies, aerobic conditions									
Soil name	**Soil type (USDA)**	**pH ($CaCl_2$)**	**T (°C)**	**% MWHC**	**DT$_{50}$ (d)**	**DT$_{90}$ (d)**	**DT$_{50}$ (d) 20°C, pF2 / 10 kPa**	**St. (r^2)**	**Kinetic model**
Hattersheim, SLS, D	silt loam 1	7.0	20	45	9.1	30.2	7.5	0.9919	SFO
Frankfurt, SLV, D	sandy loam	6.2	20	45	17.9	59.9	13.9	0.9868	SFO
Royston, Flint Hall, UK	silt loam 2	7.4	20	45	14.5	48.1	10.4	0.9959	SFO
Arithmetic mean (n=3)							10.6		
Geometric mean (n=3)							10.25		

The worst-case non-normalised DT$_{50}$ values of 17.9 days for AE B107137 (DFF-acid) was used to calculate PEC$_{soil}$ values in combination with the maximum amount of metabolite observed in parent studies (16.8%). The arithmetic mean normalised DT$_{50}$ value of 10.6 days has been used in FOCUS groundwater and surface water exposure assessments. A formation fraction of 1 directly from parent was assumed for groundwater assessments.

Table 9.1.1- 4: Summary of laboratory normalised DegT$_{50}$ (20 °C and pF2) values for AE 0542291 (DFF-amide)

AE 0542291 (DFF-amide), Laboratory studies, aerobic conditions									
Soil name	**Soil type (USDA)**	**pH ($CaCl_2$)**	**T (°C)**	**% MWHC**	**DT$_{50}$ (d)**	**DT$_{90}$ (d)**	**DT$_{50}$ (d) 20°C, pF2 / 10 kPa**	**St. (r^2)**	**Kinetic model**
Hattersheim, SLS, D	silt loam 1	7.0	20	45	13.6	45.2	11.1	0.987	SFO
Frankfurt, SLV, D	sandy loam	6.2	20	45	58.7	194.9	45.7	0.999	SFO
Royston, Flint Hall, UK	silt loam 2	7.4	20	45	33.2	110.2	23.8	0.991	SFO
Arithmetic mean (n=3)							26.9		
Geometric mean (n=3)							23.0		

The worst-case non-normalised DT$_{50}$ values of 58.7 days for AE 0542291 (DFF-amide) was used to calculate PEC$_{soil}$ values in combination with the maximum amount of metabolite observed in parent studies (26.3%). The arithmetic mean normalised DT$_{50}$ value of 26.9 days has been used in FOCUS groundwater and surface water exposure assessments. A formation fraction of 1 directly from parent was assumed for groundwater assessments.

CP 9.1.1.2 Field studies

CP 9.1.1.2.1 Soil dissipation studies

Aclonifen

A terrestrial field dissipation study with aclonifen, formulated as BANDUR®, a suspension concentrate containing 600 g/L aclonifen, was conducted at four trial sites in Germany, Northern Europe. In addition, a second terrestrial field dissipation study with aclonifen, formulated as

BANDUR®, was conducted at two trial sites in Southern Europe; Almacelles in Spain and Cruas, Southern France.

These studies were evaluated during the previous EU review and are still considered as reliable to assess the rate of degradation of aclonifen under field conditions. A new kinetic modelling assessment of field studies according to FOCUS Degradation Kinetics (2006, 2014) has been provided (KCA 7.1.2.2.1/07, [redacted] & [redacted], M-675285-01-1). Aclonifen was found to have moderate rates of degradation under field conditions with DT_{50} values similar to those observed under laboratory conditions. To provide a conservative risk assessment, the worst-case field $DisT_{50}$ value of 196.8 days was used to calculate the predicted environmental concentration in soil, including $PEC_{soil\ accumulation}$.

Table 9.1.1- 5: Summary of field DT_{50} values for aclonifen

Compound	Field dissipation $DisT_{50}$ (not normalised)		
	$DisT_{50}$ range (days)	Number of datasets (n)	Worst-case $DisT_{50}$ (days) for exposure assessment
Aclonifen	31.8 – 196.8	6	196.8

For further information on field dissipation studies please refer to Document MCA, Section 7.1.2.2.1.

Diflufenican

The soil degradation of diflufenican was further investigated in two field dissipation studies with a total of 12 trial sites across Europe.

The first 6 trials have been conducted in Germany. Data for one trial at Osnabrück was excluded, due to unacceptably high data scatter. However, the results from the remaining 5 sites of this study were considered as supporting or supplementary data, as the samples were taken to limited depths of 5 cm. The further 6 trials have been conducted throughout Europe. The trial at Goch in Germany was excluded, due to unacceptably high concentrations of diflufenican in the control plots. The field dissipation data of 10 trials were kinetically evaluated and normalised to 20°C and moisture at field capacity (100 % field capacity pF2, 20°C, Q_{10} 2.2) according standard FOCUS procedures.

To provide a conservative risk assessment, the worst-case field $DisT_{50}$ value of 621 days was used to calculate the predicted environmental concentration in soil, including $PEC_{soil\ accumulation}$. However it should be noted this worst-case value is reported to be statistically not fully reliable, as it shows a very low coefficient of correlation r^2.

Table 9.1.1- 6: Summary of field DT_{50} values for diflufenican

Diflufenican, Field studies								
Soil type (ADAS)	**Location**	**pH ($CaCl_2$)**	**Depth (cm)**	**$DisT_{50}$ (d) actual**	**$DisT_{90}$ (d) actual**	**St. (r^2)**	**DT_{50} (d) 20°C / pF2, Q_{10} 2.2**	**Method of calculation**
Silt loam [T]	[redacted]	7.2 [n]	5	214		0.86	88.4	
Sandy silt loam [T]	[redacted], D	6.5 [n]	5	245		0.87	118.8	
Silt loam [T]	[redacted], D	6.7 [n]	5	240		0.94	101.6	
Silt clay loam [T]	[redacted], D	7.5 [n]	5	219		0.94	88.6	
Silt loam [T]	[redacted], D	5.7 [n]	5	215		0.90	85.6	
Loamy sand	[redacted], [redacted], UK	5.8	30	**621** [nr]	2063	0.493	282.0	SFO
Sandy silt loam	[redacted], F	7.1	30	241	801	0.796	130.0	SFO
Sandy loam	[redacted], [redacted], NL	6.3	30	389 [nr]	1292	0.495	199.5	SFO
Clay	[redacted], [redacted], ES	7.6	30	236	784	0.738	122.2	SFO
Clay loam	[redacted], I	6.9	30	224	744	0.748	103.4	SFO
Geometric mean (n = 5)				315			156.0	
Median (n = 5)				241			130	

[n] medium not reported
[nr] statistically not fully relieble, low r^2
[T] textural system not reported

CP 9.1.1.2.2 Soil accumulation studies

Aclonifen

Soil accumulation studies were carried out with aclonifen, formulated as BANDUR®, a suspension concentrate containing 600 g/L aclonifen, as field DT_{90} values indicated some persistence leading to residual residue levels remaining one year after application under Northern European climates. Consequently, accumulation studies were conducted to determine aclonifen levels in soil following annual applications over a three year period at sites near [redacted], Nordrhein Westfalen in Northern Germany and [redacted], Bavaria in Southern Germany. No accumulation of aclonifen residues was observed at either location.

For further information on field accumulation studies please refer to Document MCA, Section 7.1.2.2.2. The studies were evaluated during the previous EU review and were accepted as plausible but were not considered sufficient to address the potential accumulation of aclonifen in soil. An assessment of accumulated PEC_{soil} for aclonifen is provided in Document MCP, Section 9.1.3.

Diflufenican

The accumulation potential of diflufenican was evaluated during the Annex I Inclusion and was accepted by the European Commission (SANCO/3782/08 – rev. 1 – 14 March 2008).

It is concluded in the EFSA Scientific Report 122 (2007) that the maximum soil concentration is 0.405 mg/kg over the top 5 cm soil layer. Plateau concentration (i.e. the maxuimum amount of diflufenican remaining immediately prior to the following years application) would be 0.245 mg/kg. Considering the worst-case soil an accumulation factor of 2.53 in the top 5 cm of soil was derived. This value is proposed for calculation of long-term PEC_{soil} values.

Because of their short half-lives there is no possibility that degradation products of diflufenican would accumulate.

CP 9.1.2 Mobility in the soil

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

CP 9.1.2.1 Laboratory studies

Aclonifen

The adsorption/desorption characteristics of aclonifen was determined in standard batch equilibrium experiments. No correlation with soil pH was observed. For further information on laboratory studies please refer to Document MCA, Section 7.1.4.1.

Table 9.1.2- 1: Summary of soil adsorption coefficients for aclonifen

Report reference	Soil	Texture	pH	OC [%]	K_f (mL/g)	K_{OC} (mL/g)	1/n (-)
KCA 7.1.3.1.1/01 M-174332-01-1	Chazay d'Azergues (90/8)	Loam	6.4	1.1	58.5	5318	0.878
	Hurley (90/10)	Sandy loam	7.3	1.7	92.6	5447	0.885
	Speyer 2.2 (90/9)	Loamy sand	5.7	2.5	265.3	10612	1.003
KCA 7.1.3.1.1/02 M-562667-02-1	Laacher Hof AXXa	Sandy loam	5.8	1.7	87.7	5156.9	0.8358
	Höfchen am Hohenseh	Silt loam	6.2	2.0	111.9	5594.8	0.8522
	Hanscheider Hof	Loam	5.6	2.8	181.5	6480.4	0.8778
	Laacher Hof Wurmwiese	Sandy loam	5.0	1.9	92.4	4863.8	0.8400
	Dollendorf II	Loam	7.0	6.1	252.5	4139.9	0.8615
Arithmetic mean					142.8	5951.6	**0.8792**
Geometric mean					125.0	**5727.0**	0.8778

The geometric mean K_{oc} value of 5727 and arithmetic mean 1/n value of 0.88 were selected for PEC_{gw} and PEC_{sw} modelling.

Diflufenican

The mobility in soil of diflufenican and its degradation products AE B107137 (DFF-acid) and AE 0542291 (DFF-amide) were evaluated during the Annex I Inclusion and was accepted by the European Commission (SANCO/3782/08 – rev. 1 – 14 March 2008). Adsorption/desorption characteristics of diflufenican and its metabolites were determined in standard batch equilibrium experiments. No correlations with soil pH were observed.

Table 9.1.2- 2: Summary of soil adsorption coefficients for diflufenican

Soil name	Texture (USDA)	pH	OC (%)	K_F (mL/g)	K_{OC} (mL/g)	1/n (-)
Sandy loam, St. Genis les Ollières, F	Sandy loam	7.7	2.09	33.9	1622	0.875
Loamy sand, Péage du Roussillon, F	Loamy sand	6.6	0.75	13.5	1800	0.917
Clay loam, Ongar, UK	Clay loam	6.6	1.68	39.8	2369	0.934
Silty clay loam, Chazay, F	Silty clay loam	6.8	2.26	48.9	2164	0.923
Ongar, Shelly Field, UK	Clay loam	6.2	2.4	98.82	4118	0.901
Kissendorf, D	Silt loam	6.7	1.4	46.28	3306	0.897
Manningtree, UK	Sandy loam	5.3	3.6	267.51	7431	0.991
Santilly, F	Loam	7.0	0.9	39.86	4428	0.940
Lleida, ES	Clay loam	8.0	2.9	88.91	3066	0.917
Chazay, F	Clay loam	6.6	1.9	73.49	3868	0.879
Arithmetic mean (n=10)					**3417**	**0.917**
Geometric mean (n=10)					3091	

For diflufenican the arithmetic mean K_{oc} value of 3417 and 1/n value of 0.917 were selected for PEC_{gw} and PEC_{sw} modelling.

Table 9.1.2- 3: Summary of soil adsorption coefficients for AE B107137 (DFF-acid)

Soil name	Texture (USDA)	pH	OC (%)	K_F (mL/g)	K_{OC} (mL/g)	1/n (-)
Ongar, 98/26, UK	Loam [A]	7.0	1.9	0.22	12	0.72
Beccles, 98/28, UK	Sand	5.8	1.6	0.11	7	0.99
Royston, 99/16, UK	Clay loam	7.6	4.7	0.38	8	0.54
Baylham, 99/17, UK	Sandy loam	6.0	1.8	0.42	23	0.68
Arithmetic mean (n=4)					**13**	**0.734**
Geometric mean (n=4)					11.1	

[A] Texture (ADAS) Clay loam

For AE B107137 (DFF-acid) the arithmetic mean K_{oc} value of 13 and 1/n value of 0.734 were selected for PEC_{gw} and PEC_{sw} modelling.

Table 9.1.2- 4: Summary of soil adsorption coefficients for AE 0542291 (DFF-amide)

Soil name	Texture (USDA)	pH	OC (%)	K_F (mL/g)	K_{OC} (mL/g)	1/n (-)
Levington, E070300A, UK	Sandy loam	6.0	0.8	1.3	160	0.80
Baylham, E160501A, UK	Sandy loam	5.3	1.2	1.5	127	0.84
Ongar, E220501B, UK	Clay loam	7.0	2.6	3.6	137	0.77
Sinfin, E070601A, UK	Clay	6.0	3.9	4.0	103	0.85
Arithmetic mean (n=4)					**132**	**0.815**
Geometric mean (n=4)					130.2	

For AE 0542291 (DFF-amide) the arithmetic mean K_{oc} value of 132 and 1/n value of 0.815 were selected for PEC_{gw} and PEC_{sw} modelling.

CP 9.1.2.2 Lysimeter studies

Aclonifen

The potential mobility of aclonifen has been assessed by modelling and therefore a lysimeter study is not required.

Diflufenican

The lysimeter study performed for diflufenican was evaluated during the Annex I Inclusion and was accepted by the European Commission (SANCO/3782/08 – rev. 1 – 14 March 2008). The study confirmed that, even after repeated application, neither diflufenican nor any of its degradation products were detected in the leachate at concentrations that would pose a risk to groundwater.

CP 9.1.2.3 Field leaching studies

The potential mobility of aclonifen and diflufenican have been assessed by modelling and therefore field leaching studies are not required.

CP 9.1.3 Estimation of concentrations in soil

Predicted environmental concentrations in soil (PEC_S)

PEC_{soil} for Aclonifen

Data Point:	KCP 9.1.3/01
Report Author:	[redacted] A. L.; [redacted] A.
Report Year:	2019
Report Title:	Aclonifen: PECsoil in Europe - Use as spray application in legumes and winter cereals in Europe
Report No:	VC/19/025G
Document No:	M-675289-01-1
Guideline(s) followed in study:	none
Deviations from current test guideline:	Current guideline: EU Commission (1995 and 2000). FOCUS (1997 and 2014) No deviation
Previous evaluation:	No, not previously submitted
GLP/Officially recognised testing facilities:	No, not conducted under GLP/Officially recognised testing facilities
Acceptability/Reliability:	Yes

The predicted environmental concentrations in soil (PEC_{soil}) of aclonifen was estimated as follows using the standard approach for legumes and winter cereals. The results for winter cereals are summarised below. Calculations assumed an even distribution of the compound in upper 0-5 cm soil layer following application and a soil density of 1.5 g/cm^3. A simple Excel spreadsheet was used for the calculations.

The use of aclonifen on winter cereals was assessed according to the Good Agricultural Practice (GAP) as summarised below.

Table 9.1.3- 1: Application data of aclonifen according to the use pattern in Europe

Individual crop	FOCUS crop	Rate	Interval	Plant interception	BBCH stage	Amount reaching soil
		g/ha	(days)	(%)	(-)	g/ha
Winter Wheat	Winter cereals	350	-	0	00-13	350
Winter Wheat	Winter cereals	175	-	0	00-13	175

The calculations were based on the maximum intended application rate together with the maximum intended number of applications per season and (for multi-application sequences) the minimum interval between the applications. Crop interception was taken into account according to the BBCH growth stage, as recommended by FOCUS (2014).

Substance parameters used as input in the calculations are summarised in Table 9.1.3- 2. The worst-case DT_{50} field value of 196.8 days was selected for the PEC_{soil} calculations.

Table 9.1.3- 2: Compound and scenario input parameters as used for the calculation

Compound	Molar mass (g/mol)	Max occur. in soil (%)	DT_{50} (days)	Molar mass corr. factor (-)
Aclonifen	264.7	100	196.8	1.0
Soil bulk density (g cm^{-3})	1.5			
Soil mixing depth (cm)	5			
Tillage depth for plateau (if relevant) (cm)	20			

Standard PEC_{soil} calculations use the soil mixing depth of 5 cm for the calculation of the maximum concentrations. For the cases where the agricultural practice involves deep soil tillage (or other mixing process), the effect of the soil processing is taken into account for the assessment of long-term behaviour of the respective substance. In such case, a tillage depth of 20 cm is used for the evaluation of background soil concentrations. The details of the calculation can be found below.

A 1st tier estimation of the initial PEC_{soil} concentration is done using the equation

$$PEC_{soil} = \frac{A \cdot f}{\rho_{soil} \cdot d} \quad (1)$$

with A being the nominal single field application rate, f the fraction reaching soil surface (taking into account crop interception factors according to FOCUS), ρ_{soil} the dry soil bulk density, and d the thickness of the soil layer.

In single application scenarios, the initial PEC_{soil} value is equal to the overall maximum. For multiple (n) applications with constant application rate, crop interception, and application interval, the maximum PEC_{soil} can be written as

$$PEC_{soil,max} = \frac{A \cdot f}{\rho_{soil} \cdot d} \cdot \frac{1 - e^{-k\,n\,\Delta t}}{1 - e^{-k\,\Delta t}} \quad (2)$$

where Δt the application interval and k is the first order degradation rate, calculated from the soil half-life (DT_{50}) as

$$k = \frac{\ln 2}{DT_{50}} \quad (3)$$

For multiple (n) applications with variable application rate, crop interception, or application interval, the PEC_{soil} just after the application (i) can be calculated stepwise as

$$PEC(i)_{soil,max} = \frac{A(i) \cdot f(i)}{\rho_{soil} \cdot d} + PEC(i)_{soil,co} \tag{4}$$

where $PEC_{soil,co}$ represents the residue from the preceding applications at the time of the actual application. For the first application, $PEC_{soil,co}$ is zero, for the following applications it can be written as

$$PEC(i)_{soil,co} = PEC(i-1)_{soil} \cdot e^{-k\,\Delta t(i)} \tag{5}$$

with $\Delta t(i)$ being the time interval between applications (i-1) and (i). $PEC_{soil,max}$ is then defined as the maximum of the individual PEC_{soil} values.

$$PEC_{soil,max} = \max(PEC(i)_{soil,max}) \tag{6}$$

Concentrations over time

For first-order kinetics with a degradation rate k the declining PEC values at time t after the maximum can be calculated by

$$PEC(t) = PEC_{max} \cdot e^{-k\,t} \tag{7}$$

For a better comparison of exposure and effect data time-weighted average concentrations (TWA) may be useful. For first-order kinetics, the TWA are given by the following formula.

$$TWA(t) = PEC_{max} \cdot \frac{1}{k \cdot t} \cdot (1 - e^{-k\,t}) \tag{8}$$

Accumulation after long term use

Potential accumulation after long term use is also assessed, based on the maximum $PEC_{soil,max}$ concentration of the respective compound, obtained as described before.

In case of a single application (or a multiple application sequence leading to the maximum PEC_{soil} after the last application), it can be shown that the maximum concentration in soil after perpetual use ($PEC_{soil,accu}$) can be expressed as

$$PEC_{soil,accu} = PEC_{soil,max} \cdot \frac{1}{1 - e^{-k \cdot t}} \tag{9}$$

where t is the number of days between two events where $PEC_{soil,max}$ is reached, *i.e.*, 365 days for yearly applications, 730 days for bi-yearly applications, *etc*. This PEC_{soil} value is based on a normal mixing depth. In the case of a multiple application sequence leading to the maximum PEC_{soil} before the last application another approach has to be used.

The concentration in soil after an infinite number of applications and immediately before the application in the last year (the so called plateau concentration $PEC_{plateau}$) can be written as

$$PEC_{plateau} = PEC_{soil,accu} \cdot \frac{d}{d_{accu}} \cdot e^{-k \cdot t} \qquad (10)$$

This formula can take the effect of deep soil tillage (or another mixing process) into account by distributing the soil residue amongst larger amounts of soil (larger soil mixing depth d_{accu} of, *e.g.*, 20 cm). In the absence of such mixing process, the factors involving mixing depth cancel out.
The total PEC_{soil} taking the effect of accumulation into account is then the sum of $PEC_{plateau}$ and the maximum PEC_{soil}, as defined previously.

$$PEC_{soil,total} = PEC_{plateau} + PEC_{soil,max} \qquad (11)$$

The plateau concentration is driven by the dissipation DT_{50} in soil. The ratio between maximum PEC_{soil} due to actual application and the respective plateau concentration (taking effect of tillage into account here) can be written as

$$\frac{PEC_{plateau}}{PEC_{soil,max}} = \frac{e^{-k \cdot t}}{1 - e^{-k \cdot t}} \cdot \frac{d}{d_{accu}} \qquad (12)$$

Inspection of Equation (12) shows that this ratio is independent of the application rate. For a DT_{90} of less than a year, the plateau concentration is marginal (< 3% of actual $PEC_{soil,max}$ for d = 5 cm and d_{accu} = 20 cm). It is thus deemed appropriate to neglect the plateau concentration in such a case.

Detailed results (maximum, short-term and long-term PEC and TWA, and accumulation values) for individual uses are provided in the following tables.

Table 9.1.3- 3: PEC$_{soil}$ of aclonifen 1 x 350 g ha^{-1} pre- and post-emergence on cereals

PEC$_{soil}$ (mg/kg)		Winter cereals 1 x 350 g/ha (0% intercept)			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.4667		N/A	N/A
Short term	24 h	0.4650	0.4658		
	2 d	0.4634	0.4650		
	4 d	0.4601	0.4634		
Long term	7 d	0.4553	0.4610		
	14 d	0.4442	0.4553		
	21 d	0.4334	0.4498		
	28 d	0.4228	0.4444		
	42 d	0.4025	0.4338		
	50 d	0.3913	0.4279		
	100 d	0.3281	0.3933		
Plateau concentration (20cm)		0.0446	-	N/A	N/A
PEC$_{accumulation}$ (PEC$_{act}$ + PEC$_{soil}$ plateau)		0.5113	-	N/A	N/A

Table 9.1.3- 4: PEC$_{soil}$ of aclonifen 1 x 175 g ha^{-1} post-emergence on cereals

PEC$_{soil}$ (mg/kg)		Winter cereals 1 x 175 g/ha (0% intercept)			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.2333		N/A	N/A
Short term	24 h	0.2325	0.2329		
	2 d	0.2317	0.2325		
	4 d	0.2301	0.2317		
Long term	7 d	0.2277	0.2305		
	14 d	0.2221	0.2277		
	21 d	0.2167	0.2249		
	28 d	0.2114	0.2222		
	42 d	0.2012	0.2169		
	50 d	0.1957	0.2139		
	100 d	0.1641	0.1967		
Plateau concentration (20cm)		0.0223	-	N/A	N/A
PEC$_{accumulation}$ (PEC$_{act}$ + PEC$_{soil}$ plateau)		0.2556	-	N/A	N/A

Overview of maximum PEC$_{soil}$ values of aclonifen for all use patterns under consideration is shown below.

Use pattern	Aclonifen (mg/kg)
1 x 350 g/ha spray treatment on Winter cereals	0.4667
1 x 175 g/ha spray treatment on Winter cereals	0.2333

The accumulation potential of aclonifen after long term use was also assessed, employing the larger soil depth for the calculation of the background concentration in cases where tillage is relevant. The results are presented below.

Use pattern	PEC_{soil}	Aclonifen (mg/kg)
Winter cereals 1 x 350 g/ha	Plateau (20cm) Total (20 + 5 cm)	0.0446 0.5113
Winter cereals 1 x 175 g/ha	Plateau (20cm) Total (20 + 5 cm)	0.0223 0.2556

PEC_{soil} for Diflufenican

Data Point:	KCP 9.1.3/02
Report Author:	[redacted]; [redacted]
Report Year:	2015
Report Title:	Diflufenican (DFF) and metabolites: PECsoil EUR - Use in winter cereals, arable crops in Europe
Report No:	EnSa-15-0029
Document No:	M-510301-01-1
Guideline(s) followed in study:	not applicable
Deviations from current test guideline:	Current guideline: EU Commission (1995 and 2000), FOCUS (1997 and 2014) No deviation
Previous evaluation:	No, not previously submitted
GLP/Officially recognised testing facilities:	No, not conducted under GLP/Officially recognised testing facilities
Acceptability/Reliability:	Yes

The predicted environmental concentrations in soil (PEC_{soil}) of diflufenican and its metabolites were estimated as follows using the standard approach for winter cereals. The results are summarised below. Calculations assumed an even distribution of the compound in upper 0-5 cm soil layer following application and a soil density of 1.5 g/cm^3. A simple Excel spreadsheet was used for the calculations. The details of the calculations are the same as described for those performed above with aclonifen.

The use of diflufenican on winter cereals was assessed according to the Good Agricultural Practice (GAP) as summarised below.

Table 9.1.3- 5: Application data of diflufenican

Individual crop	FOCUS crop	Rate	Interval	Plant interception	BBCH stage	Amount reaching soil
		g/ha	(days)	(%)	(-)	g/ha
Winter Wheat (GAP)	Winter cereals	70	-	0	00-13	70
Winter Wheat (GAP)	Winter cereals	35	-	0	00-13	35
Winter Wheat (Simulation)	Winter cereals	80	-	0	00-30	80
Winter Wheat (Simulation)	Winter cereals	60	-	0	11-30	60

Plant interception is decided based on BBCH growth stage. The difference in BBCH stages between the GAP and the simulation has no impact as plant interception is set to zero.

The calculations conservatively cover the maximum intended application rates together with the maximum intended number of applications per season. Crop interception was taken into account according to the BBCH growth stage, as recommended by FOCUS (2014).

Substance parameters used as input in the calculations are summarised in Table 9.1.3- 6. The worst-case non-normalised field DT_{50} value of 621 days was selected for the PEC_{soil} calculations with diflufenican and worst-case non-normalised laboratory DT_{50} values of 17.9 and 58.7 days were selected for the diflufenican metabolites AE B107137 (DFF acid) and AE 0542291 (DFF-amide). The DT_{50} values and maximum occurrence of metabolites in soil are consistent with those provided in the EFSA Scientific Report 122 (2007), 1-84 for diflufenican.

Table 9.1.3- 6: Compound and scenario input parameters as used for the calculation

Compound	Molar mass (g/mol)	Max occur. in soil (%)	DT_{50} (days)	Molar mass corr. factor (-)
Diflufenican	394.3	100	621 [A]	1.0
AE B107137 (DFF-acid)	283	16.8	17.9	0.7177
AE 0542291 (DFF-amide)	282	26.3	58.7	0.7152
Soil bulk density (g cm^{-3})	1.5			
Soil mixing depth (cm)	5			
Tillage depth for plateau (if relevant) (cm)	20			

[A] Worst case non-normalised field DT50, statistically not fully reliable, low r^2

Standard PEC_{soil} calculations use the soil mixing depth of 5 cm for the calculation of the maximum concentrations. For the cases where the agricultural practice involves deep soil tillage (or other mixing process), the effect of the soil processing is taken into account for the assessment of long-term behaviour of the respective substance. In such case, a tillage depth of 20 cm is used for the evaluation of background soil concentrations.

Detailed results (maximum, short-term and long-term PEC and TWA, and accumulation values) for individual uses are provided in the following tables.

Table 9.1.3- 7: PEC$_{soil}$ of diflufenican 1 x 80 g ha^{-1} pre- and post-emergence on cereals

PEC$_{soil}$ (mg/kg)		Winter cereals 1 x 80 g/ha (0% intercept)			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.107	-	N/A	N/A
Short term	24 h	0.107	0.107		
	2 d	0.106	0.107		
	4 d	0.106	0.106		
Long term	7 d	0.106	0.106		
	14 d	0.105	0.106		
	21 d	0.104	0.105		
	28 d	0.103	0.105		
	42 d	0.102	0.104		
	50 d	0.101	0.104		
	100 d	0.095	0.101		
Plateau concentration (20cm)		0.212	-	-	N/A
PEC$_{accumulation}$ (PEC$_{act}$ + PEC$_{soil}$ plateau)		0.319	-	N/A	N/A

PEC$_{soil}$ values for diflufenican and its metabolites are calculated for an application rate of 80 g a.s./ha which is higher than the maximum rate of 70 g a.s./ha and the lower rate of 35 g a.s./ha applied via ACL+DFF SC 600 and thus covers the actual application rates of ACL+DFF SC 600

Table 9.1.3- 8: PEC$_{soil}$ of diflufenican 1 x 60 g ha^{-1} post-emergence on cereals

PEC$_{soil}$ (mg/kg)		Winter cereals 1 x 60 g/ha (0% intercept)			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.080	-	N/A	N/A
Short term	24 h	0.080	0.080		
	2 d	0.080	0.080		
	4 d	0.080	0.080		
Long term	7 d	0.079	0.080		
	14 d	0.079	0.079		
	21 d	0.078	0.079		
	28 d	0.078	0.079		
	42 d	0.076	0.078		
	50 d	0.076	0.078		
	100 d	0.072	0.076		
Plateau concentration (20cm)		0.159	-	N/A	N/A
PEC$_{accumulation}$ (PEC$_{act}$ + PEC$_{soil}$ plateau)		0.239	-	N/A	N/A

PEC$_{soil}$ values for diflufenican and its metabolites are calculated for an application rate of 60 g a.s./ha which is higher than the lower rate of 35 g a.s./ha applied via ACL+DFF SC 600 and thus covers the actual application rates of ACL+DFF SC 600

Table 9.1.3- 9: PEC$_{soil}$ of AE B107137 (DFF-acid) following application of diflufenican 1 x 80 g ha^{-1} pre- and post-emergence on cereals

PEC$_{soil}$ (mg/kg)		Winter cereals 1 x 80 g/ha (0% intercept)			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.013		N/A	N/A
Short term	24 h	0.012	0.013		
	2 d	0.012	0.012		
	4 d	0.011	0.012		
Long term	7 d	0.010	0.011		
	14 d	0.007	0.010		
	21 d	0.006	0.009		
	28 d	0.004	0.008		
	42 d	0.003	0.006		
	50 d	0.002	0.006		
	100 d	<0.001	0.003		
Plateau concentration (20cm)		<0.001	-	-	N/A
PEC$_{accumulation}$ (PEC$_{act}$ + PEC$_{soil}$ plateau)		0.013	-	N/A	N/A

PEC$_{soil}$ values for diflufenican and its metabolites are calculated for an application rate of 80 g a.s./ha which is higher than the maximum rate of 70 g a.s./ha and the lower rate of 35 g a.s./ha applied via ACL+DFF SC 600 and thus covers the actual application rates of ACL+DFF SC 600

Table 9.1.3- 10: PEC$_{soil}$ of AE B107137 (DFF-acid) following application of diflufenican 1 x 60 g ha^{-1} post-emergence on cereals

PEC$_{soil}$ (mg/kg)		Winter cereals 1 x 60 g/ha (0% intercept)			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.010	-	N/A	N/A
Short term	24 h	0.009	0.009		
	2 d	0.009	0.009		
	4 d	0.008	0.009		
Long term	7 d	0.007	0.008		
	14 d	0.006	0.007		
	21 d	0.004	0.007		
	28 d	0.003	0.006		
	42 d	0.002	0.005		
	50 d	0.001	0.004		
	100 d	<0.001	0.002		
Plateau concentration (20cm)		<0.001	-	N/A	N/A
PEC$_{accumulation}$ (PEC$_{act}$ + PEC$_{soil}$ plateau)		0.010	-	N/A	N/A

PEC$_{soil}$ values for diflufenican and its metabolites are calculated for an application rate of 60 g a.s./ha which is higher than the lower rate of 35 g a.s./ha applied via ACL+DFF SC 600 and thus covers the actual application rates of ACL+DFF SC 600

Table 9.1.3- 11: PEC$_{soil}$ of AE 0542291 (DFF-amide) following application of diflufenican 1 x 80 g ha^{-1} pre- and post-emergence on cereals

PEC$_{soil}$ (mg/kg)		Winter cereals 1 x 80 g/ha (0% intercept)			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.020	-	N/A	N/A
Short term	24 h	0.020	0.020		
	2 d	0.020	0.020		
	4 d	0.019	0.020		
Long term	7 d	0.018	0.019		
	14 d	0.017	0.018		
	21 d	0.016	0.018		
	28 d	0.014	0.017		
	42 d	0.012	0.016		
	50 d	0.011	0.015		
	100 d	0.006	0.012		
Plateau concentration (20cm)		<0.001	-	-	N/A
PEC$_{accumulation}$ (PEC$_{act}$ + PEC$_{soil}$ plateau)		0.020	-	N/A	N/A

PEC$_{soil}$ values for diflufenican and its metabolites are calculated for an application rate of 80 g a.s./ha which is higher than the maximum rate of 70 g a.s./ha and the lower rate of 35 g a.s./ha applied via ACL+DFF SC 600 and thus covers the actual application rates of ACL+DFF SC 600

Table 9.1.3- 12: PEC$_{soil}$ of AE 0542291 (DFF-amide) following application of diflufenican 1 x 60 g ha^{-1} post-emergence on cereals

PEC$_{soil}$ (mg/kg)		Winter cereals 1 x 60 g/ha (0% intercept)			
		Single application		Multiple applications	
		Actual	TWA	Actual	TWA
Initial		0.015	-	N/A	N/A
Short term	24 h	0.015	0.015		
	2 d	0.015	0.015		
	4 d	0.014	0.015		
Long term	7 d	0.014	0.014		
	14 d	0.013	0.014		
	21 d	0.012	0.013		
	28 d	0.011	0.013		
	42 d	0.009	0.012		
	50 d	0.008	0.011		
	100 d	0.005	0.009		
Plateau concentration (20cm)		<0.001	-	N/A	N/A
PEC$_{accumulation}$ (PEC$_{act}$ + PEC$_{soil}$ plateau)		0.015	-	N/A	N/A

PEC$_{soil}$ values for diflufenican and its metabolites are calculated for an application rate of 60 g a.s./ha which is higher than the lower rate of 35 g a.s./ha applied via ACL+DFF SC 600 and thus covers the actual application rates of ACL+DFF SC 600

An overview of the maximum PEC$_{soil}$ values of diflufenican and its metabolites AE B107137 (DFF-acid) and AE 0542291 (DFF-amide) for all use patterns under consideration is shown below.

Use pattern	Diflufenican (mg/kg)	AE B107137 (DFF-acid) (mg/kg)	AE 0542291 (DFF-amide) (mg/kg)
1 x 80 g/ha spray treatment on Winter cereals	0.107	0.013	0.020
1 x 60 g/ha spray treatment on Winter cereals	0.080	0.010	0.015

The accumulation potential of diflufenican after long term use was also assessed, employing the larger soil depth for the calculation of the background concentration in cases where tillage is relevant. The results are presented below.

Use pattern	PEC$_{soil}$	Diflufenican (mg/kg)	AE B107137 (DFF-acid) (mg/kg)	AE 0542291 (DFF-amide) (mg/kg)
Winter cereals 1 x 80 g/ha	Plateau (20cm) Total (20 + 5 cm)	**0.212** **0.319**	<0.001 0.013	<0.001 0.020
Winter cereals 1 x 60 g/ha	Plateau (20cm) Total (20 + 5 cm)	0.159 0.239	<0.001 0.010	<0.001 0.015

In the EFSA Scientific Report 122 (2007), 1-84 the maximum PEC$_{soil}$ for diflufenican is derived from a field soil accumulation study ([redacted]P and [redacted]E, 1991, M-176400-01-1) conducted at 6 sites in the UK. The maximum concentration detected in the accumulation study (6.33 µg/cm^2 for sampling conducted over 0-30 cm soil depth) was converted to a concentration of 0.844 mg/kg in 0-5 cm soil depth in the Diflufenican DAR [6.33 µg/cm^2 / 7.5 = 0.844 mg/kg in 5 cm soil assuming a bulk density of 1.5 g/cm^3]. As the application rate in the accumulation study was 250 g a.s./ha, the soil concentration was reduced pro rata for an application rate of 120 g a.s./ha [0.844 mg/kg x 120/250 = 0.405 mg/kg]. This value (0.405 mg/kg) has been used in the Document MCP Section 10 as a worst-case PEC$_{soil}$ values for diflufenican.

PEC$_{soil}$ of ACL+DFF SC 600

PEC$_{soil}$ for the formulation is calculated using a standard approach with 5 cm mixing depth and soil density of 1.5 kg/L. Crop interception is not considered. No degradation data is available for the product. Therefore, TWA, plateau, and accumulation concentrations are not calculated, and tillage depth is not relevant here.

Table 9.1.3- 13: PEC$_{soil}$ for ACL+DFF SC 600 on cereals

Preparation	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)
ACL+DFF SC 600	861 [A]	1.148	-	-	-	-

[A] Based on a product density of 1.230 g/mL, a maximum application rate of 1 x 0.7 L product/ha and 0% crop interception

CP 9.2 Fate and behaviour in water and sediment

Studies on fate and behaviour in water sediment systems with the formulation were not performed, since it is possible to extrapolate from data obtained with the active substances.

Aclonifen

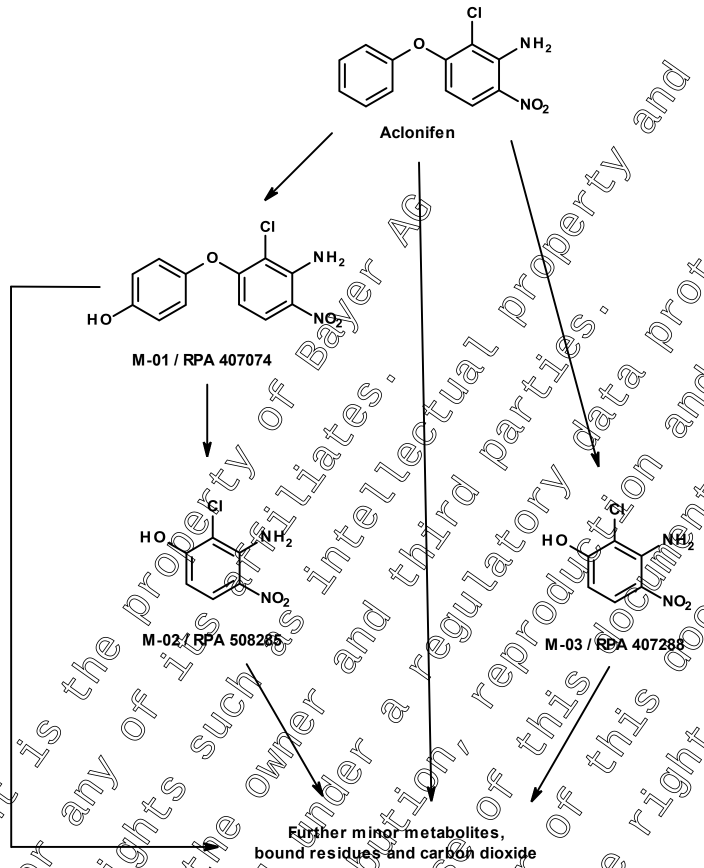
The fate and behaviour of aclonifen in aquatic systems has been investigated under abiotic and biotic conditions in a series of laboratory studies. A number of studies were submitted for the first inclusion of aclonifen into Annex I of Council Directive 91/414/EEC and reviewed under uniform principles (DAR, Germany, 2006). In addition a number of new studies are provided for the current EU review. All valid environment fate studies are considered in the MCA 7 dossier.

Under sterile aqueous conditions, at temperatures of 22°C, 50°C and 70°C, aclonifen was found to be hydrolytically stable at pH 5, 7 and 9. The photolytic degradation of [aniline-UL-^{14}C]-aclonifen in water has been investigated under sterile conditions in phosphate buffer solution at pH 7. Aclonifen exhibited slow degradation when irradiated in sterile pH 7 buffer solution at 25 ºC, with up to 88 % of applied radioactivity still recovered as parent at the end of the study after 16 days (equivalent to 30 days natural sunlight). No major (>10%) metabolites were formed by photolysis in water. In aerobic mineralization studies treated with [aniline-UL-^{14}C]-aclonifen, the metabolites M-01 and M-02 were observed as major metabolites (≥ 10%).

Water sediment studies have been conducted with ^{14}C-aclonifen, uniformly labelled in either the phenoxy or aniline rings. In water/sediment systems aclonifen was readily degraded with total system DT$_{50}$ values ranging from 5 to 44 days. The compound dissipated rapidly from the water phase with DT$_{50}$ values of between <1 to 3 days. Once deposited in the sediment, parent continued to degrade over time with DT$_{50}$ values of between 8 to 69 days.

In water sediment systems treated with [aniline-UL-^{14}C]-aclonifen, M-01, M-02 and M-03 were observed as minor metabolites. The combined sum of the cleaved metabolites M-02 and M-03 observed throughout the water sediment study was at a maximum of only 4%. No significant metabolites were observed in water sediment studies treated with [phenoxy-UL-^{14}C]-aclonifen. Formation of unextractable bound residues in sediment was the major metabolic pathway in aquatic systems. Under sterile conditions, aclonifen was relatively stable confirming that its metabolism is largely microbially mediated. Non-extractable sediment bound residues were observed under sterile conditions at much lower levels than observed in microbially viable systems, indicative of metabolites of aclonifen also binding to the sediment matrix with time in microbially active systems. The metabolic pathway for aclonifen in aquatic systems is shown below.

Figure 9.2- 1: Metabolic pathway for aclonifen in surface water



A new kinetic evaluation of the experimental data generated in two water sediment studies KCA 7.2.2.3/01 and KCA 7.2.2.3/06 has been conducted according to FOCUS kinetics guidance with the aim of deriving DT_{50} values for use as modelling and trigger endpoints ([redacted] & [redacted], 2019, KCA 7.2.2.3/08). The geometric mean modelling endpoints DT_{50} values for aclonifen are summarised in the table below.

Table 9.2- 1: Summary of modelling endpoint DT_{50} values for aclonifen in aquatic / sediment systems

Compound	Laboratory modelling endpoint DT_{50} (20 °C)		
	DT_{50} range (days)	Number of datasets (n)	Geometric mean DT_{50} (days) for exposure assessment
Total system	4.80 – 43.81	4	14.4
Water phase	0.83 -3.39	4	1.7
Sediment	8.43 – 69.49	4	26.1

Diflufenican

The fate and behaviour of diflufenican in aquatic systems has been investigated under abiotic and biotic conditions in a series of laboratory studies. The studies were evaluated during the Annex I Inclusion and was accepted by the European Commission (SANCO/3782/08 – rev. 1 – 14 March 2008).

Diflufenican is stable to hydrolysis at pH 5, 7 and 9 under sterile aqueous conditions. The photolytic degradation of [pyridyl-2-^{14}C]-diflufenican has been investigated under sterile conditions in aqueous phosphate buffer solution at pH 7. Diflufenican exhibited slow degradation when irradiated in sterile pH 7 buffer solution at 25 ºC with a DT_{50} value of 133 days (equivalent to 259 days of 50°N UK summer sunlight). No major (>10%) metabolites were formed by photolysis in water. The metabolite AE B107137 (DFF acid) was also hydrolytically stable at pH 5, 7 and 9 and photolytically stable at pH 7.

Water sediment studies have been conducted with ^{14}C-diflufenican, labelled in either the pyridine or 2,4-difluorophenyl rings. In water/sediment systems diflufenican was degraded with total system DT_{50} values ranging from 90 to 345 days. The compound dissipated rapidly from the water phase via a combination of partitioning to sediment and degradation.

AE B107137 (DFF-acid) was observed as a major metabolite at a maximum of 32.6% AR in water, 13.3% AR in sediment and 45.9% AR in the total system. AE C522392 was observed as a minor metabolite. The metabolic pathway for diflufenican in aquatic systems is shown below.

Figure 9.2- 2: Metabolic pathway for diflufenican in surface water

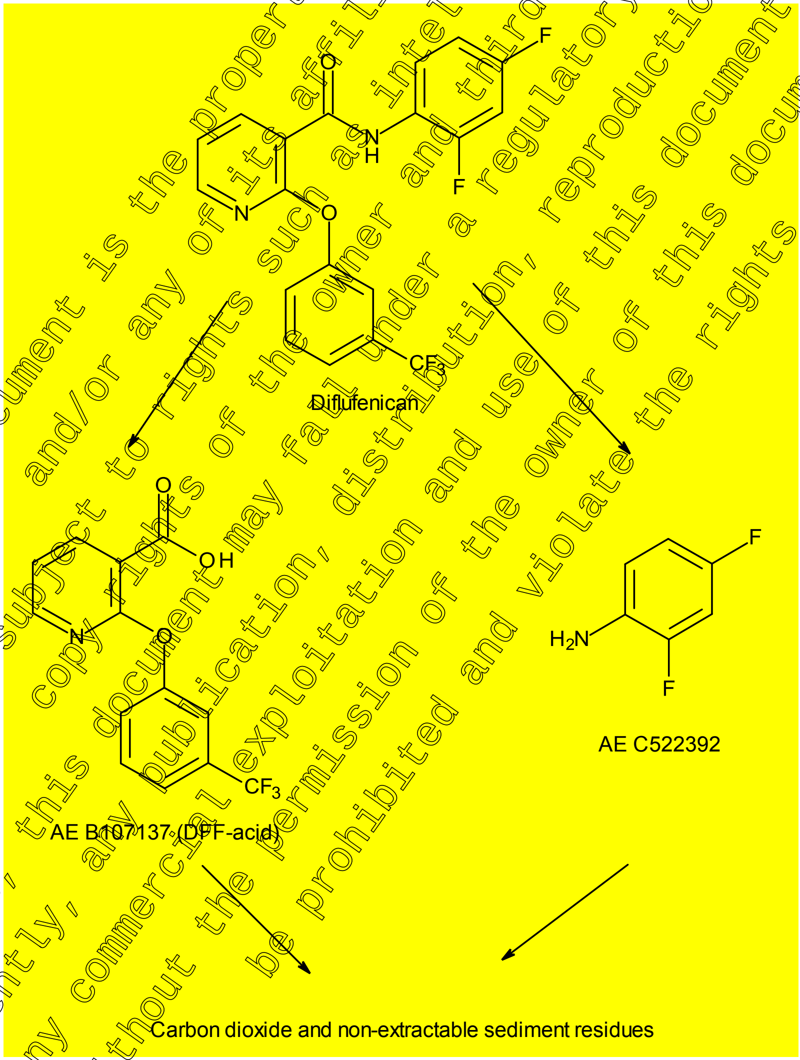


Table 9.2- 2: Summary of modelling endpoint DT_{50} values for diflufenican in aquatic / sediment systems

Compound	Laboratory modelling endpoint DT_{50} (20 °C)		
	DT_{50} range (days)	Number of datasets (n)	Geometric mean DT_{50} (days) for exposure assessment
Total system	90 - 345	4	175

CP 9.2.1 Aerobic mineralisation in surface water

This study is a new requirement under **Commission Regulation (EU) No 284/2013**. Two aerobic mineralisation studies (OECD 309) with aclonifen were performed for Annex I Renewal, a 'pelagic' test system KCA 7.2.2.2/01 (Mislanker S. & [redacted] D., 2016, M-551820-01-1) representative of the water column of the open waters or oceans and a 'suspended sediment' test system KCA 7.2.2.2/02 ([redacted] & [redacted], 2019, M-674035-01-1) representative of most surface waters according to OECD Test Guideline 309.

In the 'pelagic' test system the aerobic mineralisation of aclonifen was investigated in natural water at pH 7.1. The results indicated that aclonifen was slowly degraded in both low and high concentration tests but did not significantly mineralise (<1% AR) over the study duration. DT_{50} values for aclonifen in pelagic water were 205.5 and 361 days. The aclonifen metabolite M-01 was formed at a maximum of 10% AR along with 3 other minor unidentified metabolites (≤ 3.5% AR).

However exposure of aclonifen to open water is not expected as the compound is very strongly adsorbed (mean K_{oc} > 5500) & immobile in soil. Any residues unintentionally reaching surface waters will not reach open water such as lakes, reservoirs, estuaries or the sea.

In the 'suspended sediment' test system the aerobic mineralisation of aclonifen was investigated in natural water at pH 6.9. The results indicated that aclonifen was readily metabolised in both low and high concentration tests but did not significantly mineralise (<5% AR) over the study duration. DT_{50} values for aclonifen in suspended sediment water were 25.7 and 39.2 days. The aclonifen metabolite M-02 was formed at a maximum of 17% AR in flasks treated with [aniline-UL-^{14}C]-aclonifen. No significant metabolites were observed in flasks treated with [phenoxy-UL-^{14}C]-aclonifen.

For further information on aerobic mineralisation in surface water studies please refer to Document MCA, Section 7.2.2.2.

CP 9.2.2 Water/sediment study

Aclonifen

Water sediment studies KCA 7.2.2.3/01 ([redacted] P. & [redacted] E., 2000, M-199647-01-1) and KCA 7.2.2.3/06 ([redacted] D., 2019, M-674479-01-1) have been conducted with [^{14}C]-aclonifen, uniformly labelled in either the phenoxy or aniline rings. Aclonifen reached a maximum of 61.0% of applied radioactivity (AR) in the sediment at day 3 before declining to 4.1% at 100 days.

Aclonifen was degraded by hydroxylation to form M-01 and hydrolysis (of aclonifen or M-01) to form M-02. Under reduced conditions the formation of M-04 was observed on two occasions in the Manningtree system and once in the Ongar system, possibly as a result of the reduction of M-02 as the reduced forms of aclonifen and M-01 were not observed. During the course of these studies, no metabolites were observed in either water or sediment phases at levels > 5% AR at more than one timepoint.

A new kinetic evaluation of the two water sediment studies was conducted according to FOCUS kinetics guidance KCA 7.2.2.3/08 ([redacted] & [redacted], 2019, M-675507-01-1). The total system $DegT_{50}$ values calculated for aclonifen are provided in the table below. The geometric mean $DegT_{50}$ value of 14.4 days was used in FOCUS surface water exposure assessments.

Table 9.2.2- 1: Summary of total system $DegT_{50}$ values for aclonifen in aquatic / sediment systems

Phase	Sediment system	Model	St. (χ^2err) (%)	DT_{50} (days)
Total System	Manningtree	SFO	8.79	43.81
Total System	Ongar	HS DT_{90}/3.32	5.84	40.06
Total System	Anglersee	SFO	8.60	5.04
Total System	Wiehltalsperre	SFO	12.98	4.80
			Geometric mean	**14.4**

For further information on water/sediment studies please refer to Document MCA, Section 7.2.2.3.

Diflufenican

The degradation and dissipation behaviour of diflufenican in water sediment systems was investigated in two laboratory studies conducted with either [2-pyridyl-^{14}C]- or [2,4-difluorophenyl-^{14}C]-labelled diflufenican in a total of 4 water sediment systems. The total system DT_{50} values listed in the EFSA Conclusion Report are summarised in Table 9.2.2- 2. Diflufenican reached a maximum of 74.4% of applied radioactivity (AR) in the sediment at day 14 before declining to 56.8% at 365 days.

Table 9.2.2- 2: Summary of total system $DegT_{50}$ values for diflufenican in aquatic / sediment systems

Phase	Sediment system	Model	St. (r^2)	DT_{50} (days)
Total System	Unter Widdersheim	SFO	0.76	90
Total System	Bickenbach	SFO	0.77	154
Total System	Rew Pond	SFO	0.82	345
Total System	Swiss Lake	SFO	0.96	195
			Geometric mean	**175**

In FOCUS surface water evaluations for diflufenican, the geometric mean total system DT_{50} of 175 days has been used for the water phase and a default worst-case value of 1000 days for the sediment phase. For the metabolite AE B107137 (DFF-acid) which was formed in water sediment systems at a maximum of 45.9% AR after 30 days, a DT_{50} of 76.2 days was used for the water phase and a default worst-case value of 1000 days for the sediment phase. The metabolite AE 0542291 (DFF amide) was not observed in water sediment systems.

CP 9.2.3 Irradiated water/sediment study

An irradiated water sediment study is an optional higher tier study which is not required for ACL+DFF SC 600 (500 + 100) G.

CP 9.2.4 Estimation of concentrations in groundwater

For the PEC calculations following use of ACL+DFF SC 600 (500 + 100) G, the following representative uses were considered.

Individual crop	FOCUS crop	Rate per Season Aclonifen (g a.s. /ha)	Interval (days)	Timing of application BBCH Stage
Winter Wheat	Winter cereals	350	-	00-13
Winter Wheat	Winter cereals	175	-	00-13

PEC$_{gw}$ modelling approach

The predicted environmental concentrations in groundwater (PEC$_{gw}$) for the active substance aclonifen was calculated using the simulation models PEARL 4.4.4 and PELMO 5.5.3 following the recommendations of the FOCUS working group on groundwater scenarios. In addition, modelling was conducted for the Châteaudun scenario with MACRO 5.5.4.

The leaching calculations were run over 26 years, as proposed for pesticides which may be applied every year. The first six years are a 'warm up' period; only the last 20 years were considered for the assessment of the leaching potential (for biennial applications the simulations are run for 46 years, with the first six as 'warm up'). The 80th percentile of the average annual groundwater concentrations in the percolate at 1 m depth under a treated field were evaluated and were taken as the relevant PEC$_{gw}$ values. In respect to the assessment of a potential groundwater contamination this shallow depth reflects a worst case. The effective long-term groundwater concentrations will be even lower due to dilution in the groundwater layer.

According to FOCUS, the calculations were conducted based on mean soil half-lives, referenced to standard temperature and moisture conditions. Crop interception will reduce the amount of a compound reaching the soil and therefore this has been taken into account depending on the growth stage at application.

CP 9.2.4.1 Calculation of concentrations in groundwater

Predicted environmental concentrations in groundwater (PEC$_{GW}$)

PECgw for Aclonifen

Data Point:	KCP 9.2.4.1/01
Report Author:	[redacted]; [redacted]
Report Year:	2019
Report Title:	Aclonifen: PECgw FOCUS PEARL, PELMO and MACRO - Use in winter cereals and legumes in Europe
Report No:	VC/19/025D
Document No:	M-675020-02-1
Guideline(s) followed in study:	none
Deviations from current test guideline:	Current guideline: FOCUS (2000 and 2014) No deviation
Previous evaluation:	No, not previously submitted
GLP/Officially recognised testing facilities:	No, not conducted under GLP/Officially recognised testing facilities
Acceptability/Reliability:	Yes

Predicted environmental concentrations of the active substance aclonifen in groundwater recharge (PEC$_{gw}$) were calculated for the use in Europe, using the simulation models FOCUS PEARL 4.4.4, FOCUS PELMO 5.5.3 and FOCUS MACRO 5.5.4.

Use of aclonifen in winter cereals and legumes was investigated in the report. The results for winter cereals are summarised in this document. Detailed application parameters are presented in Table 9.2.4-

1.

Table 9.2.4- 1: Application data of aclonifen according to the use pattern in Europe

Individual crop	FOCUS crop	Rate	Interval	Plant interception	BBCH stage	Amount reaching soil
		g/ha	(days)	(%)	(-)	g/ha
Winter Wheat	Winter cereals	350	-	0	00-13	350
Winter Wheat	Winter cereals	175	-	0	00-13	175

Applications were made at the date of emergence date for FOCUS ground water scenarios on winter cereals. Full details are given in Table 9.2.4- 2.

Table 9.2.4- 2: Application dates of aclonifen according to the use pattern in winter cereals

Crop	Scenario	Application relative day used in modelling
Winter wheat	Chateaudun	Emergence
	Hamburg	Emergence
	Kremsmuenster	Emergence
	Jokioinen	Emergence
	Okehampton	Emergence
	piacenza	Emergence
	Porto	Emergence
	Sevilla	Emergence
	Thiva	Emergence

Further input parameters for PEC_{gw} modelling of aclonifen are summarised below in Table 9.2.4- 3.

Table 9.2.4- 3: Compound input parameters for aclonifen

Parameter	Unit	Aclonifen
Molecular weight	g mol^{-1}	264.7
Vapour pressure (at 20°C)	Pa	1.6 e-5
Solubility (at 20°C)	mg L^{-1}	1.4
DT_{50} in soil	d	79.1
Koc	mL g^{-1}	5727
Kom	mL g^{-1}	3322
Freundlich exponent	-	0.878
Plant uptake factor ()	-	0
Exponent moisture	(-)	0.49
Exponent temperature	(1/K)	0.0948

Following the proposal of the FOCUS working group on groundwater scenarios, the concentrations in the percolate at 1 m depth were evaluated. This shallow depth reflects a worst case with respect to the assessment of a potential groundwater contamination. The effective long-term groundwater concentrations will be even lower due to dilution in the upper groundwater layer. Detailed results for all scenarios for FOCUS PEARL, FOCUS PELMO and FOCUS MACRO are listed below.

Table 9.2.4- 4: FOCUS PEARL, PELMO and MACRO PEC_{gw} results of aclonifen in winter cereals at 350 g/ha

Crop	Scenario	80[th] percentile PECgw at 1 m soil depth (µg/L)	
		Aclonifen	
		PEARL	PELMO
Winter wheat	Chateaudun	<0.001	<0.001
	Hamburg	<0.001	<0.001
	Jokioinen	<0.001	<0.001
	Kremsmunster	<0.001	<0.001
	Okehampton	<0.001	<0.001
	Piacenza	<0.001	<0.001
	Porto	<0.001	<0.001
	Sevilla	<0.001	<0.001
	Thiva	<0.001	<0.001
MACRO	Chateaudun	<0.001	

Table 9.2.4- 5: FOCUS PEARL, PELMO and MACRO PEC_{gw} results of aclonifen in winter cereals at 175 g/ha

Crop	Scenario	80[th] percentile PECgw at 1 m soil depth (µg/L)	
		Aclonifen	
		PEARL	PELMO
Winter wheat	Chateaudun	<0.001	<0.001
	Hamburg	<0.001	<0.001
	Jokioinen	<0.001	<0.001
	Kremsmunster	<0.001	<0.001
	Okehampton	<0.001	<0.001
	Piacenza	<0.001	<0.001
	Porto	<0.001	<0.001
	Sevilla	<0.001	<0.001
	Thiva	<0.001	<0.001
MACRO	Chateaudun	<0.001	

Overview of the PECgw values obtained with individual FOCUS models (PEARL) and (PELMO) are shown below.

Table 9.2.4- 6: Maximum FOCUS PEARL PEC_{gw} results of aclonifen for uses on winter cereals

Use pattern	Aclonifen (µg/L)
Winter cereals 350g a.s./ha 1 application each year	<0.001
Winter cereals 175g a.s./ha 1 application each year	<0.001

Table 9.2.4- 7: Maximum FOCUS PELMO PEC_{gw} results of aclonifen for uses on winter cereals

Use pattern	Aclonifen (µg/L)
Winter cereals 350g a.s./ha 1 application each year	<0.001
Winter cereals 175g a.s./ha 1 application each year	<0.001

CP 9.2.4.2 Additional field tests

No additional studies on the formulation ACL+DFF SC 600 (500 + 100 g/L) under field conditions are deemed necessary. The fate and behaviour of the compounds in this formulation are fully covered from laboratory experiments and modelling.

CP 9.2.5 Estimation of concentrations in surface water and sediment

Predicted environmental concentrations in surface water (PEC_{SW})

Predicted environmental concentrations of the herbicides aclonifen and diflufenican in surface water (PEC_{sw}) and sediment (PEC_{sed}) were calculated for the representative uses in Europe, employing the tiered FOCUS Surface Water (SW) approach. All relevant entry routes of a compound into surface water (principally a combination of spray drift and runoff/erosion or drain flow) were considered in these calculations.

Step 1: In this, the most conservative step, all inputs are considered as a single loading to the water body and a worst-case PEC_{sw} and PEC_{sed} is calculated.

Step 2: Individual loadings into the water body from different entry routes are considered. Scenarios are also considered for Northern and Southern Europe separately but no specific crop scenarios are defined.

Step 3: An exposure assessment using realistic worst-case scenarios is made. The scenarios are representative of agricultural conditions in Europe and consider weather, soil, crop and different water-bodies. Simulations use the models PRZM, MACRO and TOXSWA.

Step 4: PEC values are refined by considering mitigation measures or specific scenario descriptions on a case-by-case basis.

PEC_{sw} for aclonifen

For PEC_{sw} and PEC_{sed} calculations use of aclonifen at application rates of 350 g a.s./ha and 175 g a.s./ha on winter cereals was considered.

The simulation model FOCUS SWASH v5.3 comprising of FOCUS PRZM v4.3.1, FOCUS MACRO v5.5.4 and FOCUS TOXSWA v5.5.3 was used to calculate the reported PEC_{sw} values. SWAN v5.0.1 was used to apply Step 4 mitigation measures.

Predicted environmental concentrations in surface water and sediment (PEC_{sw} and PEC_{sed}) at Steps 1 and 2 have been calculated for use on winter cereals. A comparison of the concentrations predicted at Steps 1 and 2 with ecotoxicological endpoints indicated the exposure assessments for both compounds were too conservative to conduct a successful risk assessment for aquatic organisms. Consequently predicted environmental concentrations in surface water and sediment (PEC_{sw} and PEC_{sed}) at Step 3 and Step 4 have been calculated.

Data Point:	KCP 9.2.5/01
Report Author:	[redacted]
Report Year:	2019
Report Title:	Aclonifen (ACL): PECsw,sed FOCUS - Use in winter cereals in Europe
Report No:	EnSa-19-0662
Document No:	M-675039-01-1
Guideline(s) followed in study:	none
Deviations from current test guideline:	Not applicable for MoA.
Previous evaluation:	No, not previously submitted
GLP/Officially recognised testing facilities:	No, not conducted under GLP/Officially recognised testing facilities
Acceptability/Reliability:	Yes

Predicted environmental concentrations of the herbicide aclonifen in surface water (PEC_{sw}) and sediment (PEC_{sed}) were calculated for the use in winter cereals in Europe, employing the tiered FOCUS Surface Water approach. All relevant entry routes of a compound into surface water (principally a combination of spray drift and runoff/erosion or drain flow) were considered in these calculations.

Intended GAPs for the use of aclonifen in winter cereals in Europe were analysed and consolidated according to regulatory and modelling requirements. As a result, one or more uses may be covered by a single modelling GAP row (DGR). The translation of the regulatory GAP for modelling purposes is shown in Table 9.2.5- 1.

Table 9.2.5- 1: GAP translation for modelling purposes

GAP group ID	GAP group name (DGR) and use IDs	Covered crop(s)	Growth stage	Max. apps	Interval (days)	Rate (kg a.s./ha)
DGR I	winter cereals	winter cereals	BBCH 00 - 13	1	-	1×0.35
DGR II	winter cereals	winter cereals	BBCH 00 - 13	1	-	1×0.175

The implementation of the modelling GAP at Steps 1-2 level is shown in Table 9.2.5- 2. One or more calculations (modelling tasks, PMT) are necessary to fully cover the use assessed. The number and name of the respective DGR is provided for easier reference.

Table 9.2.5- 2: FOCUS Steps 1-2 specific data for the GAPs assessed

Run IDs (DGR / PMT)	GAP group name (DGR)	Assessment name (PMT)	FOCUS crop (crop group)	Season	Crop cover
DGR I PMT I	winter cereals	full	cereals, winter (arable crops)	autumn (Oct - Feb)	no interception
DGR II PMT II	winter cereals	half	cereals, winter (arable crops)	autumn (Oct - Feb)	no interception

The implementation of the modelling GAP at Step 3 level is shown in the following tables. Please note that PMTs at Steps 1-2 and Step 3 do not necessarily fully correspond to each other due to inherent differences in the models. A 30d window starting 3 days after emergence was used to simulate the post-emergence applications.

A summary of all Step 3 PMTs is provided in Table 9.2.5- 3. The detailed information on individual uses is given in Table 9.2.5- 4 and Table 9.2.5- 5 for use on winter cereals at 350 g a.s./ha (DGR Winter cereals, PMT Full) and in Table 9.2.5- 6 and Table 9.2.5- 7 for use on winter cereals at 175 g a.s./ha (DGR Winter cereals, PMT Half).

Table 9.2.5- 3: Overview of FOCUS Step 3 assessments

Run IDs (DGR / PMT)	GAP group name (DGR)	Assessment name (PMT)	FOCUS crop (crop group)
DGR I PMT I	Winter cereals	Full	Cereals, winter (arable crops)
DGR II PMT II	Winter cereals	Half	Cereals, winter (arable crops)

<u>Winter Cereals full rate 350 g a.s./ha</u>

Table 9.2.5- 4: Summarised FOCUS Step 3 application data (PAT settings)

Assessment name	Scenario	Application window used in modelling
Full	D1 Ditch/Stream D2 Ditch/Stream D3 Ditch D4 Pond/Stream D5 Pond/Stream D6 Ditch R1 Pond/Stream R3 Stream R4 Stream	11-Sep - 11-Oct 11-Oct - 10-Nov 07-Nov - 07-Dec 08-Sep - 08-Oct 27-Oct - 26-Nov 16-Nov - 16-Dec 29-Oct - 28-Nov 17-Nov - 17-Dec 27-Oct - 26-Nov

Table 9.2.5- 5: Full FOCUS Step 3 application data

Run IDs **GAP group name (DGR)** **Assessment name (PMT)**	DGR I / PMT I Winter cereals Full
FOCUS model crop (crop group)	Cereals, winter (arable crops)
Use pattern	0.35 kg a.s./ha
Appl. method (Run-off CAM, depth inc.)	Ground spray (1 - appln soil linear, 4 cm)
PAT start date (relative to crop event or absolute)	14 days before emergence
PAT window range	30 days for all scenarios (min = 30 days)

Drainage scenarios	PAT start/end date (Julian day)	Application date	Runoff scenarios	PAT start/end date (Julian day)	Application date
D1 Ditch/Stream	11-Sep/11-Oct (254/284)	11-Sep	R1 Pond/Stream	29-Oct/28-Nov (302/332)	14-Nov
D2 Ditch/Stream	11-Oct/10-Nov (284/314)	11-Oct	R3 Stream	17-Nov/17-Dec (321/351)	17-Nov
D3 Ditch	07-Nov/07-Dec (311/341)	06-Nov	R4 Stream	27-Oct/26-Nov (300/330)	03-Nov
D4 Pond/Stream	08-Sep/08-Oct (251/281)	10-Sep			
D5 Pond/Stream	27-Oct/26-Nov (300/330)	26-Nov			
D6	16-Nov/16-Dec	06-Dec			

Ditch	(320/350)				

Winter Cereals half rate 175 g a.s./ha

Table 9.2.5- 6: Summarised FOCUS Step 3 application data (PAT settings)

Assessment name	Scenario	Application window used in modelling
Half	D1 Ditch/Stream D2 Ditch/Stream D3 Ditch D4 Pond/Stream D5 Pond/Stream D6 Ditch R1 Pond/Stream R3 Stream R4 Stream	11-Sep - 11-Oct 11-Oct - 10-Nov 07-Nov - 07-Dec 08-Sep - 08-Oct 27-Oct - 26-Nov 16-Nov - 16-Dec 29-Oct - 28-Nov 17-Nov - 17-Dec 27-Oct - 26-Nov

Table 9.2.5- 7: Full FOCUS Step 3 application data

Run IDs **GAP group name (DGR)** **Assessment name (PMT)**	DGR II / PMT II Winter cereals Half
FOCUS model crop (crop group)	Cereals, winter (arable crops)
Use pattern	0.175 kg a.s./ha
Appl. method (Run-off CAM, depth inc.)	Ground spray (1 - appln soil linear, 4 cm)
PAT start date (relative to crop event or absolute)	14 days before emergence
PAT window range	30 days for all scenarios (min = 30 days)

Drainage scenarios	PAT start/end date (Julian day)	Application date	Runoff scenarios	PAT start/end date (Julian day)	Application date
D1 Ditch/Stream	11-Sep/11-Oct (254/284)	11-Sep	R1 Pond/Stream	29-Oct/28-Nov (302/332)	14-Nov
D2 Ditch/Stream	11-Oct/10-Nov (284/314)	11-Oct	R3 Stream	17-Nov/17-Dec (321/351)	17-Nov
D3 Ditch	07-Nov/07-Dec (311/341)	06-Nov	R4 Stream	27-Oct/26-Nov (300/330)	03-Nov
D4 Pond/Stream	08-Sep/08-Oct (251/281)	10-Sep			
D5 Pond/Stream	27-Oct/26-Nov (300/330)	26-Nov			
D6 Ditch	16-Nov/16-Dec (320/350)	06-Dec			

Standard procedures and settings were used for Steps 1-2 and 3 assessments. At Step 4 the following mitigation settings were used (see Table 9.2.5- 8 and Table 9.2.5- 9).

Table 9.2.5- 8: Mitigation approaches used

Buffer length	Mitigation type	Drift reduction nozzles
0 m	Spray drift	0 %, 50 %, 75 %, 90 %
5 m	Spray drift	
10 m	Spray drift & RunOff	
15 m	Spray drift & RunOff	
20 m	Spray drift & RunOff	

Table 9.2.5- 9: Runoff mitigation parameters used for the assessment

Fractional reduction in:		10 m, 15 m	20 m
Runoff:	**Volume**	0.60	0.80
	Flux	0.60	0.80
Erosion:	**Mass**	0.85	0.95
	Flux	0.85	0.95

Substance related parameters used for aclonifen in the calculations at FOCUS SW Steps 1-2 level are summarised in Table 9.2.5- 10 and at Step 3/4 level in Table 9.2.5- 11.

Table 9.2.5- 10: Substance parameters used at FOCUS Steps 1-2 level

Parameter	**Unit**	**Aclonifen**
Molar mass	(g/mol)	264.7
Water solubility	(mg/L)	1.4
Koc	(mL/g)	5727
Degradation DT_{50}		
Soil	(days)	79.1
Total system	(days)	14.4
Water	(days)	14.4
Sediment	(days)	14.4
Max occurrence		
Water / sediment	(%)	100
Soil	(%)	100

Table 9.2.5- 11: Substance parameters used for aclonifen at Step 3/4 level

Parameter	**Unit**	**Parent**
Substance		Aclonifen
SWASH code		ACL
General		
Molar mass	(g/mol)	264.7
Water solubility (temp.)	(mg/L)	1.4 (20 °C)
Vapour pressure (temp.)	(Pa)	1.6E-05 (20 °C)
Crop processes		
Coefficient for uptake by plant (TSCF)	(-)	0
Wash-off factor	(1/m)	50
Sorption		
Koc	(mL/g)	5727.13
K_{OM}	(mL/g)	3322
Freundlich exponent ($^{1}/_{n}$)	(-)	0.88
Transformation		
DT_{50} in soil	(days)	79.1
temperature	(°C)	20
moisture content (pF)	(log(cm))	2

Parameter	Unit	Parent
formation fraction in soil	(-)	-
DT_{50} in water	(days)	1000
temperature	(°C)	20
formation fraction in water	(-)	-
DT_{50} in sediment	(days)	14.4
temperature	(°C)	20
formation fraction in sediment	(-)	-
DT_{50} on canopy	(days)	10
Exponent for the effect of moisture		
PRZM and TOXSWA (Walker exp.)	(-)	0.7
MACRO (calibrated value)	(-)	0.49
Effect of temperature		
TOXSWA (molar activation energy)	(kJ/mol)	65.4
MACRO (effect of temperature)	(1/K)	0.0948
PRZM (Q_{10})	(-)	2.58

The PEC values were calculated for aclonifen according to the equations implemented in the "STEPS 1-2 in FOCUS" calculator (see Table 9.2.5- 12 and Table 9.2.5- 13).

Table 9.2.5- 12: FOCUS Steps 1-2 PECsw and PECsed for aclonifen, GAP group name winter cereals, assessment name full (DGR I / PMT I)

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	7d-$PEC_{sw,twa}$ (µg/L)**	Max PECsed (µg/kg)*
Step 1	-	16.7	RunOff	12.0	774
Step 2					
Northern Europe	Oct. - Feb. (Autumn)	6.97 *	Erosion	5.81	390 *
Southern Europe	Oct. - Feb. (Autumn)	5.67 *	Erosion	4.70	315 *

* Single applications are marked.
** TWA interval as required by ecotox

Table 9.2.5- 13: FOCUS Steps 1-2 PECsw and PECsed for aclonifen, GAP group name winter cereals, assessment name half (DGR II / PMT II)

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	7d-$PEC_{sw,twa}$ (µg/L)**	Max PECsed (µg/kg)*
Step 1	-	8.36	RunOff	5.99	387
Step 2					
Northern Europe	Oct. - Feb. (Autumn)	3.49 *	Erosion	2.90	195 *
Southern Europe	Oct. - Feb. (Autumn)	2.84 *	Erosion	2.35	158 *

* Single applications are marked.
** TWA interval as required by ecotox

Step 3 calculations were conducted for aclonifen employing the models of the FOCUS SW suite. Reported values represent loadings *via* all relevant entry routes (see Table 9.2.5- 14 and Table 9.2.5- 15).

Table 9.2.5- 14: FOCUS Step 3 PECsw and PECsed for aclonifen, GAP group name winter cereals, assessment name full (DGR I / PMT I)

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	7d-$PEC_{sw,twa}$ (µg/L)**	Max PECsed (µg/kg)*
Step 3					
D1	Ditch	2.22 *	Spray drift	1.63	8.52 *
D1	Stream	1.95 *	Spray drift	0.244	1.22 *
D2	Ditch	2.23 *	Spray drift	1.63	7.27 *
D2	Stream	1.98 *	Spray drift	1.45	6.46 *
D3	Ditch	2.19 *	Spray drift	0.251	1.26 *
D4	Pond	0.076 *	Spray drift	0.068	0.570 *
D4	Stream	1.90 *	Spray drift	0.078	0.412 *
D5	Pond	0.076 *	Spray drift	0.068	0.648 *
D5	Stream	2.05 *	Spray drift	0.111	0.583 *
D6	Ditch	2.22 *	Spray drift	1.48	6.32 *
R1	Pond	0.105 *	RunOff	0.095	1.42 *
R1	Stream	1.44 *	Spray drift	0.087	3.69 *
R3	Stream	2.01 *	Spray drift	0.160	122 *
R4	Stream	1.45 *	Spray drift	0.094	2.74 *

* Single applications are marked.
** TWA interval as required by ecotox

Table 9.2.5- 15: FOCUS Step 3 PECsw and PECsed for aclonifen, GAP group name winter cereals, assessment name half (DGR II / PMT II)

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*	Dominant entry route	7d-$PEC_{sw,twa}$ (µg/L)**	Max PECsed (µg/kg)*
Step 3					
D1	Ditch	1.11 *	Spray drift	0.812	4.32 *
D1	Stream	0.972 *	Spray drift	0.122	0.609 *
D2	Ditch	1.11 *	Spray drift	0.812	3.68 *
D2	Stream	0.990 *	Spray drift	0.723	3.27 *
D3	Ditch	1.10 *	Spray drift	0.125	0.630 *
D4	Pond	0.038 *	Spray drift	0.034	0.291 *
D4	Stream	0.950 *	Spray drift	0.039	0.206 *
D5	Pond	0.038 *	Spray drift	0.034	0.331 *
D5	Stream	1.02 *	Spray drift	0.056	0.292 *
D6	Ditch	1.11 *	Spray drift	0.737	3.20 *
R1	Pond	0.049 *	RunOff	0.045	0.697 *
R1	Stream	0.722 *	Spray drift	0.040	1.93 *
R3	Stream	1.00 *	Spray drift	0.073	62.1 *
R4	Stream	0.726 *	Spray drift	0.043	1.52 *

* Single applications are marked.
** TWA interval as required by ecotox

FOCUS Step 4 calculations considering various mitigation measures for runoff and spray drift were conducted based on the Step 3 results (see Table 9.2.5- 16 and Table 9.2.5- 17 for PEC_{sw} values and Table 9.2.5- 18 and Table 9.2.5- 19 for PEC_{sed} values).

Predicted environmental concentrations in surface water (PEC_{SW})

Table 9.2.5- 16: FOCUS Step 4 PECsw results for aclonifen, GAP group name winter cereals, assessment name full (DGR I / PMT I)

PEC_{sw} (µg/L)	Scenario	Step 4 Aclonifen							
Nozzle reduction	Vegetated strip (m)	None	None	None	None	None	10 m	10 m	20 m
	No spray buffer (m)	0 m	5 m	10 m	15 m	20 m	10 m	15 m	20 m
None	D1 Ditch	2.22	0.602	0.319	0.218	0.166	0.319	0.218	0.166
50 %		1.11	0.301	0.159	0.109	0.083	0.159	0.109	0.083
75 %		0.555	0.150	0.080	0.054	0.041	0.080	0.054	0.041
90 %		0.222	0.060	0.032	0.022	0.017	0.032	0.022	0.017
None	D1 Stream	1.95	0.710	0.376	0.257	0.195	0.376	0.257	0.195
50 %		0.972	0.355	0.188	0.128	0.098	0.188	0.128	0.098
75 %		0.485	0.177	0.094	0.064	0.049	0.094	0.064	0.049
90 %		0.194	0.071	0.038	0.026	0.020	0.038	0.026	0.020
None	D2 Ditch	2.23	0.603	0.319	0.218	0.166	0.319	0.218	0.166
50 %		1.11	0.301	0.160	0.109	0.083	0.160	0.109	0.083
75 %		0.556	0.150	0.080	0.054	0.041	0.080	0.054	0.041
90 %		0.222	0.060	0.032	0.022	0.017	0.032	0.022	0.017
None	D2 Stream	1.98	0.723	0.383	0.262	0.199	0.383	0.262	0.199
50 %		0.990	0.361	0.191	0.131	0.099	0.191	0.131	0.099
75 %		0.494	0.180	0.096	0.065	0.050	0.096	0.065	0.050
90 %		0.198	0.072	0.038	0.026	0.020	0.038	0.026	0.020
None	D3 Ditch	2.19	0.594	0.315	0.215	0.163	0.315	0.215	0.163
50 %		1.10	0.297	0.157	0.107	0.082	0.157	0.107	0.082
75 %		0.547	0.148	0.079	0.054	0.041	0.079	0.054	0.041
90 %		0.219	0.059	0.031	0.021	0.016	0.031	0.021	0.016
None	D4 Pond	0.076	0.065	0.047	0.037	0.031	0.047	0.037	0.031
50 %		0.038	0.033	0.023	0.019	0.016	0.023	0.019	0.016
75 %		0.019	0.016	0.012	0.009	0.008	0.012	0.009	0.008
90 %		0.008	0.007	0.005	0.004	0.004	0.005	0.004	0.004
None	D4 Stream	1.90	0.694	0.368	0.251	0.191	0.368	0.251	0.191
50 %		0.950	0.346	0.184	0.125	0.095	0.184	0.125	0.095
75 %		0.474	0.173	0.092	0.063	0.048	0.092	0.063	0.048
90 %		0.190	0.069	0.037	0.032	0.032	0.037	0.032	0.032
None	D5 Pond	0.076	0.065	0.047	0.037	0.031	0.047	0.037	0.031
50 %		0.038	0.033	0.024	0.019	0.016	0.024	0.019	0.016
75 %		0.019	0.016	0.012	0.009	0.008	0.012	0.009	0.008
90 %		0.008	0.007	0.005	0.004	0.003	0.005	0.004	0.003
None	D5 Stream	2.05	0.748	0.397	0.271	0.206	0.397	0.271	0.206

PEC$_{sw}$ (µg/L)	Scenario	Step 4 Aclonifen							
Nozzle reduction	Vegetated strip (m)	None	None	None	None	None	10 m	10 m	20 m
	No spray buffer (m)	0 m	5 m	10 m	15 m	20 m	10 m	15 m	20 m
50 %		1.02	0.374	0.198	0.135	0.103	0.198	0.135	0.103
75 %		0.512	0.187	0.099	0.068	0.051	0.099	0.068	0.051
90 %		0.205	0.075	0.040	0.027	0.021	0.040	0.027	0.021
None	D6 Ditch	2.22	0.600	0.318	0.217	0.165	0.318	0.217	0.165
50 %		1.11	0.300	0.159	0.108	0.083	0.159	0.108	0.083
75 %		0.553	0.150	0.079	0.062	0.062	0.079	0.062	0.062
90 %		0.221	0.062	0.062	0.062	0.062	0.062	0.062	0.062
None	R1 Pond	0.105	0.101	0.095	0.092	0.090	0.048	0.045	0.032
50 %		0.092	0.091	0.088	0.086	0.085	0.040	0.038	0.021
75 %		0.086	0.085	0.084	0.083	0.083	0.036	0.035	0.019
90 %		0.083	0.082	0.082	0.081	0.081	0.034	0.034	0.017
None	R1 Stream	1.44	0.527	0.477	0.477	0.477	0.279	0.214	0.145
50 %		0.722	0.477	0.477	0.477	0.477	0.214	0.214	0.111
75 %		0.477	0.477	0.477	0.477	0.477	0.214	0.214	0.111
90 %		0.477	0.477	0.477	0.477	0.477	0.214	0.214	0.111
None	R3 Stream	2.01	0.732	0.513	0.513	0.513	0.388	0.265	0.201
50 %		1.00	0.513	0.513	0.513	0.513	0.234	0.234	0.123
75 %		0.513	0.513	0.513	0.513	0.513	0.234	0.234	0.123
90 %		0.513	0.513	0.513	0.513	0.513	0.234	0.234	0.123
None	R4 Stream	1.45	0.701	0.701	0.701	0.701	0.316	0.316	0.165
50 %		0.726	0.701	0.701	0.701	0.701	0.316	0.316	0.165
75 %		0.701	0.701	0.701	0.701	0.701	0.316	0.316	0.165
90 %		0.701	0.701	0.701	0.701	0.701	0.316	0.316	0.165

Table 9.2.5-17: FOCUS Step 4 PECsw results for aclonifen, GAP group name winter cereals, assessment name half (DGR II / PMT II)

PEC$_{sw}$ (µg/L)	Scenario	Step 4 Aclonifen							
Nozzle reduction	Vegetated strip (m)	None	None	None	None	None	10 m	10 m	20 m
	No spray buffer (m)	0 m	5 m	10 m	15 m	20 m	10 m	15 m	20 m
None	D1 Ditch	1.11	0.301	0.159	0.109	0.083	0.159	0.109	0.083
50 %		0.555	0.150	0.080	0.054	0.041	0.080	0.054	0.041
75 %		0.277	0.075	0.040	0.027	0.021	0.040	0.027	0.021
90 %		0.111	0.030	0.016	0.011	0.008	0.016	0.011	0.008
None	D1 Stream	0.972	0.355	0.188	0.128	0.098	0.188	0.128	0.098
50 %		0.485	0.177	0.094	0.064	0.049	0.094	0.064	0.049

PEC$_{sw}$ (µg/L)	Scenario	Step 4 Aclonifen							
Nozzle reduction	Vegetated strip (m)	None	None	None	None	None	10 m	10 m	20 m
	No spray buffer (m)	0 m	5 m	10 m	15 m	20 m	10 m	15 m	20 m
75 %		0.243	0.089	0.047	0.032	0.024	0.047	0.032	0.024
90 %		0.097	0.035	0.019	0.013	0.010	0.019	0.013	0.010
None	D2 Ditch	1.11	0.301	0.160	0.109	0.083	0.160	0.109	0.083
50 %		0.556	0.150	0.080	0.054	0.041	0.080	0.054	0.041
75 %		0.278	0.075	0.040	0.027	0.021	0.040	0.027	0.021
90 %		0.111	0.030	0.016	0.011	0.008	0.016	0.011	0.008
None	D2 Stream	0.990	0.361	0.191	0.131	0.099	0.191	0.131	0.099
50 %		0.494	0.180	0.096	0.065	0.050	0.096	0.065	0.050
75 %		0.247	0.090	0.048	0.033	0.025	0.048	0.033	0.025
90 %		0.099	0.036	0.019	0.013	0.010	0.019	0.013	0.010
None	D3 Ditch	1.10	0.297	0.157	0.107	0.082	0.157	0.107	0.082
50 %		0.547	0.148	0.079	0.054	0.041	0.079	0.054	0.041
75 %		0.273	0.074	0.039	0.027	0.020	0.039	0.027	0.020
90 %		0.109	0.030	0.016	0.011	0.008	0.016	0.011	0.008
None	D4 Pond	0.038	0.033	0.023	0.019	0.016	0.023	0.019	0.016
50 %		0.019	0.016	0.012	0.009	0.008	0.012	0.009	0.008
75 %		0.009	0.008	0.006	0.005	0.004	0.006	0.005	0.004
90 %		0.004	0.003	0.002	0.002	0.002	0.002	0.002	0.002
None	D4 Stream	0.950	0.346	0.184	0.125	0.095	0.184	0.125	0.095
50 %		0.474	0.173	0.092	0.063	0.048	0.092	0.063	0.048
75 %		0.237	0.086	0.046	0.031	0.024	0.046	0.031	0.024
90 %		0.095	0.035	0.018	0.013	0.013	0.018	0.013	0.013
None	D5 Pond	0.038	0.033	0.024	0.019	0.016	0.024	0.019	0.016
50 %		0.019	0.016	0.012	0.009	0.008	0.012	0.009	0.008
75 %		0.009	0.008	0.006	0.005	0.004	0.006	0.005	0.004
90 %		0.004	0.003	0.002	0.002	0.002	0.002	0.002	0.002
None	D5 Stream	1.02	0.374	0.198	0.135	0.103	0.198	0.135	0.103
50 %		0.512	0.187	0.099	0.068	0.051	0.099	0.068	0.051
75 %		0.256	0.093	0.049	0.034	0.026	0.049	0.034	0.026
90 %		0.102	0.037	0.020	0.014	0.010	0.020	0.014	0.010
None	D6 Ditch	1.11	0.300	0.159	0.108	0.082	0.159	0.108	0.082
50 %		0.553	0.150	0.079	0.054	0.041	0.079	0.054	0.041
75 %		0.276	0.075	0.040	0.027	0.023	0.040	0.027	0.023
90 %		0.110	0.030	0.023	0.023	0.023	0.023	0.023	0.023
None	R1 Pond	0.049	0.048	0.045	0.043	0.042	0.024	0.021	0.016
50 %		0.043	0.042	0.041	0.040	0.040	0.019	0.018	0.010
75 %		0.040	0.040	0.039	0.039	0.038	0.017	0.016	0.009
90 %		0.038	0.038	0.038	0.038	0.038	0.016	0.016	0.008

PEC$_{sw}$ (µg/L)	Scenario	Step 4 Aclonifen							
Nozzle reduction	Vegetated strip (m)	None	None	None	None	None	10 m	10 m	20 m
	No spray buffer (m)	0 m	5 m	10 m	15 m	20 m	10 m	15 m	20 m
None	R1 Stream	0.722	0.263	0.219	0.219	0.219	0.140	0.098	0.072
50 %		0.361	0.219	0.219	0.219	0.219	0.098	0.098	0.051
75 %		0.219	0.219	0.219	0.219	0.219	0.098	0.098	0.051
90 %		0.219	0.219	0.219	0.219	0.219	0.098	0.098	0.051
None	R3 Stream	1.00	0.366	0.234	0.234	0.234	0.194	0.132	0.101
50 %		0.501	0.234	0.234	0.234	0.234	0.107	0.107	0.056
75 %		0.250	0.234	0.234	0.234	0.234	0.107	0.107	0.056
90 %		0.234	0.234	0.234	0.234	0.234	0.107	0.107	0.056
None	R4 Stream	0.726	0.322	0.322	0.322	0.322	0.145	0.145	0.076
50 %		0.363	0.322	0.322	0.322	0.322	0.145	0.145	0.076
75 %		0.322	0.322	0.322	0.322	0.322	0.145	0.145	0.076
90 %		0.322	0.322	0.322	0.322	0.322	0.145	0.145	0.076

Predicted environmental concentrations in sediment (PEC$_{SED}$)

Table 9.2.5- 18: FOCUS Step 4 PECsed results for aclonifen, GAP group name winter cereals, assessment name full (DGR I / PMT I)

PEC$_{sed}$ (µg/kg)	Scenario	Step 4 Aclonifen							
Nozzle reduction	Vegetated strip (m)	None	None	None	None	None	10 m	10 m	20 m
	No spray buffer (m)	0 m	5 m	10 m	15 m	20 m	10 m	15 m	20 m
None	D1 Ditch	8.52	2.37	1.27	0.876	0.670	1.27	0.876	0.670
50 %		4.32	1.20	0.645	0.444	0.339	0.645	0.444	0.339
75 %		2.19	0.609	0.327	0.224	0.171	0.327	0.224	0.171
90 %		0.892	0.247	0.133	0.091	0.070	0.133	0.091	0.070
None	D1 Stream	1.22	0.446	0.237	0.162	0.123	0.237	0.162	0.123
50 %		0.609	0.223	0.119	0.081	0.062	0.119	0.081	0.062
75 %		0.305	0.112	0.060	0.041	0.031	0.060	0.041	0.031
90 %		0.123	0.045	0.024	0.016	0.012	0.024	0.016	0.012
None	D2 Ditch	7.27	2.01	1.08	0.740	0.565	1.08	0.740	0.565
50 %		3.68	1.02	0.544	0.373	0.285	0.544	0.373	0.285
75 %		1.86	0.513	0.275	0.188	0.144	0.275	0.188	0.144
90 %		0.753	0.208	0.111	0.076	0.059	0.111	0.076	0.059
None	D2 Stream	6.46	2.40	1.28	0.881	0.672	1.28	0.881	0.672
50 %		3.27	1.21	0.648	0.444	0.339	0.648	0.444	0.339
75 %		1.65	0.611	0.327	0.224	0.171	0.327	0.224	0.171
90 %		0.668	0.247	0.132	0.091	0.069	0.132	0.091	0.069

PEC_{sed} (µg/kg)	Scenario	Step 4 Aclonifen							
Nozzle reduction	Vegetated strip (m)	None	None	None	None	None	10 m	10 m	20 m
	No spray buffer (m)	0 m	5 m	10 m	15 m	20 m	10 m	15 m	20 m
None	D3 Ditch	1.26	0.343	0.182	0.125	0.095	0.182	0.125	0.095
50 %		0.630	0.172	0.091	0.062	0.048	0.091	0.062	0.048
75 %		0.316	0.086	0.046	0.031	0.024	0.046	0.031	0.024
90 %		0.127	0.035	0.018	0.013	0.010	0.018	0.013	0.010
None	D4 Pond	0.570	0.495	0.359	0.288	0.243	0.359	0.288	0.243
50 %		0.291	0.252	0.183	0.147	0.124	0.183	0.147	0.124
75 %		0.148	0.129	0.095	0.082	0.073	0.095	0.082	0.073
90 %		0.072	0.066	0.056	0.051	0.048	0.056	0.051	0.048
None	D4 Stream	0.412	0.151	0.080	0.055	0.042	0.080	0.055	0.042
50 %		0.206	0.075	0.040	0.027	0.021	0.040	0.027	0.021
75 %		0.103	0.038	0.020	0.017	0.017	0.020	0.017	0.017
90 %		0.041	0.018	0.017	0.017	0.017	0.017	0.017	0.017
None	D5 Pond	0.648	0.563	0.409	0.328	0.276	0.409	0.328	0.276
50 %		0.331	0.287	0.209	0.167	0.141	0.209	0.167	0.141
75 %		0.169	0.147	0.106	0.085	0.072	0.106	0.085	0.072
90 %		0.069	0.060	0.044	0.035	0.030	0.044	0.035	0.030
None	D5 Stream	0.583	0.213	0.113	0.077	0.059	0.113	0.077	0.059
50 %		0.292	0.107	0.057	0.039	0.029	0.057	0.039	0.029
75 %		0.146	0.053	0.028	0.019	0.015	0.028	0.019	0.015
90 %		0.058	0.021	0.011	0.008	0.006	0.011	0.008	0.006
None	D6 Ditch	6.32	1.76	0.940	0.646	0.494	0.940	0.646	0.494
50 %		3.20	0.888	0.475	0.326	0.249	0.475	0.326	0.249
75 %		1.62	0.449	0.240	0.165	0.126	0.240	0.165	0.126
90 %		0.658	0.182	0.097	0.067	0.051	0.097	0.067	0.051
None	R1 Pond	1.42	1.36	1.25	1.20	1.16	0.674	0.614	0.393
50 %		1.20	1.17	1.11	1.08	1.07	0.528	0.498	0.293
75 %		1.09	1.07	1.04	1.03	1.02	0.456	0.441	0.243
90 %		1.02	1.01	1.00	0.997	0.993	0.413	0.408	0.214
None	R1 Stream	3.69	3.66	3.65	3.65	3.65	0.707	0.704	0.281
50 %		3.67	3.65	3.65	3.65	3.65	0.703	0.701	0.279
75 %		3.66	3.65	3.65	3.65	3.65	0.701	0.700	0.277
90 %		3.65	3.65	3.65	3.65	3.65	0.699	0.699	0.277
None	R3 Stream	122	122	122	122	122	18.6	18.6	6.27
50 %		122	122	122	122	122	18.6	18.6	6.26
75 %		122	122	122	122	122	18.6	18.6	6.26
90 %		122	122	122	122	122	18.6	18.6	6.26
None	R4 Stream	2.74	2.74	2.74	2.74	2.74	0.597	0.596	0.253
50 %		2.74	2.74	2.74	2.74	2.74	0.596	0.596	0.253

PEC$_{sed}$ (µg/kg)	**Scenario**	**Step 4 Aclonifen**							
Nozzle reduction	Vegetated strip (m)	None	None	None	None	None	10 m	10 m	20 m
	No spray buffer (m)	0 m	5 m	10 m	15 m	20 m	10 m	15 m	20 m
75 %		2.74	2.74	2.74	2.74	2.74	0.596	0.596	0.253
90 %		2.74	2.74	2.74	2.74	2.74	0.596	0.596	0.253

Table 9.2.5- 19: FOCUS Step 4 PECsed results for aclonifen, GAP group name winter cereals, assessment name half (DGR II / PMT II)

PEC$_{sed}$ (µg/kg)	**Scenario**	**Step 4 Aclonifen**							
Nozzle reduction	Vegetated strip (m)	None	None	None	None	None	10 m	10 m	20 m
	No spray buffer (m)	0 m	5 m	10 m	15 m	20 m	10 m	15 m	20 m
None	D1 Ditch	4.32	1.20	0.645	0.444	0.339	0.645	0.444	0.339
50 %		2.19	0.609	0.327	0.224	0.171	0.327	0.224	0.171
75 %		1.11	0.308	0.165	0.113	0.087	0.165	0.113	0.087
90 %		0.451	0.125	0.067	0.046	0.035	0.067	0.046	0.035
None	D1 Stream	0.609	0.223	0.119	0.081	0.062	0.119	0.081	0.062
50 %		0.305	0.112	0.060	0.041	0.031	0.060	0.041	0.031
75 %		0.153	0.056	0.030	0.020	0.016	0.030	0.020	0.016
90 %		0.061	0.023	0.012	0.008	0.006	0.012	0.008	0.006
None	D2 Ditch	3.68	1.02	0.543	0.373	0.285	0.543	0.373	0.285
50 %		1.86	0.513	0.274	0.188	0.143	0.274	0.188	0.143
75 %		0.938	0.259	0.138	0.095	0.072	0.138	0.095	0.072
90 %		0.380	0.104	0.056	0.038	0.029	0.056	0.038	0.029
None	D2 Stream	3.27	1.21	0.647	0.444	0.339	0.647	0.444	0.339
50 %		1.65	0.611	0.326	0.224	0.171	0.326	0.224	0.171
75 %		0.833	0.308	0.165	0.113	0.086	0.165	0.113	0.086
90 %		0.337	0.124	0.066	0.045	0.035	0.066	0.045	0.035
None	D3 Ditch	0.630	0.172	0.091	0.062	0.048	0.091	0.062	0.048
50 %		0.316	0.086	0.046	0.031	0.024	0.046	0.031	0.024
75 %		0.158	0.043	0.023	0.016	0.012	0.023	0.016	0.012
90 %		0.064	0.017	0.009	0.006	0.005	0.009	0.006	0.005
None	D4 Pond	0.291	0.252	0.183	0.147	0.124	0.183	0.147	0.124
50 %		0.148	0.129	0.093	0.075	0.063	0.093	0.075	0.063
75 %		0.075	0.065	0.047	0.039	0.034	0.047	0.039	0.034
90 %		0.033	0.031	0.026	0.023	0.021	0.026	0.023	0.021
None	D4 Stream	0.206	0.075	0.040	0.027	0.021	0.040	0.027	0.021
50 %		0.103	0.038	0.020	0.014	0.010	0.020	0.014	0.010
75 %		0.052	0.019	0.010	0.007	0.007	0.010	0.007	0.007

PEC$_{sed}$ (µg/kg)	Scenario	Step 4 Aclonifen							
Nozzle reduction	Vegetated strip (m)	None	None	None	None	None	10 m	10 m	20 m
	No spray buffer (m)	0 m	5 m	10 m	15 m	20 m	10 m	15 m	20 m
90 %		0.021	0.008	0.007	0.007	0.007	0.007	0.007	0.007
None	D5 Pond	0.331	0.287	0.209	0.167	0.141	0.209	0.167	0.141
50 %		0.169	0.147	0.106	0.085	0.072	0.106	0.085	0.072
75 %		0.086	0.075	0.054	0.043	0.037	0.054	0.043	0.037
90 %		0.035	0.031	0.022	0.018	0.015	0.022	0.018	0.015
None	D5 Stream	0.292	0.107	0.057	0.039	0.029	0.057	0.039	0.029
50 %		0.146	0.053	0.028	0.019	0.015	0.028	0.019	0.015
75 %		0.073	0.027	0.014	0.010	0.007	0.014	0.010	0.007
90 %		0.029	0.011	0.006	0.004	0.003	0.006	0.004	0.003
None	D6 Ditch	3.20	0.887	0.475	0.326	0.249	0.475	0.326	0.249
50 %		1.62	0.449	0.240	0.165	0.126	0.240	0.165	0.126
75 %		0.819	0.227	0.121	0.083	0.064	0.121	0.083	0.064
90 %		0.332	0.092	0.049	0.034	0.026	0.049	0.034	0.026
None	R1 Pond	0.697	0.666	0.610	0.581	0.562	0.331	0.301	0.194
50 %		0.582	0.566	0.539	0.524	0.515	0.256	0.242	0.143
75 %		0.525	0.517	0.503	0.496	0.492	0.220	0.212	0.118
90 %		0.491	0.488	0.482	0.479	0.478	0.198	0.195	0.103
None	R1 Stream	1.93	1.92	1.91	1.91	1.91	0.362	0.360	0.142
50 %		1.92	1.91	1.91	1.91	1.91	0.359	0.359	0.141
75 %		1.91	1.91	1.91	1.91	1.91	0.358	0.358	0.140
90 %		1.91	1.91	1.91	1.91	1.91	0.358	0.357	0.140
None	R3 Stream	62.1	62.1	62.0	62.0	62.0	9.44	9.43	3.18
50 %		62.1	62.0	62.0	62.0	62.0	9.43	9.43	3.18
75 %		62.0	62.0	62.0	62.0	62.0	9.43	9.43	3.18
90 %		62.0	62.0	62.0	62.0	62.0	9.42	9.42	3.17
None	R4 Stream	1.52	1.52	1.52	1.52	1.52	0.316	0.316	0.131
50 %		1.52	1.52	1.52	1.52	1.52	0.316	0.316	0.131
75 %		1.52	1.52	1.52	1.52	1.52	0.316	0.316	0.131
90 %		1.52	1.52	1.52	1.52	1.52	0.315	0.315	0.131

PEC$_{sw}$ for diflufenican

For PEC$_{sw}$ and PEC$_{sed}$ calculations use of diflufenican at application rates of 70 g a.s./ha and 35 g a.s./ha on winter cereals was considered.

The simulation model FOCUS SWASH v5.3 comprising of FOCUS PRZM v4.3.1, FOCUS MACRO v5.5.4 and FOCUS TOXSWA v4.4.3 was used to calculate the reported PEC$_{sw}$ values. SWAN v4.0.1 was used to apply Step 4 mitigation measures.

Predicted environmental concentrations in surface water and sediment (PEC_{sw} and PEC_{sed}) at Steps 1 and 2 have been calculated for use on winter cereals. A comparison of the concentrations predicted at Steps 1 and 2 with ecotoxicological endpoints indicated the exposure assessments for both compounds were too conservative to conduct a successful risk assessment for aquatic organisms. Consequently predicted environmental concentrations in surface water and sediment (PEC_{sw} and PEC_{sed}) at Step 3 and Step 4 have been calculated.

Data Point:	KCP 9.2.5/02
Report Author:	[redacted]; [redacted]
Report Year:	2017
Report Title:	Diflufenican(DFF) and metabolites: PECsw,sed FOCUS EUR - Use in winter cereals and spring cereals in Europe
Report No:	EnSa-17-0592
Document No:	M-604961-01-1
Guideline(s) followed in study:	not applicable
Deviations from current test guideline:	Current guideline: FOCUS (2001, 2007 and 2015) No deviation
Previous evaluation:	No, not previously submitted
GLP/Officially recognised testing facilities:	No, not conducted under GLP/Officially recognised testing facilities
Acceptability/Reliability:	Yes

Predicted environmental concentrations of the herbicide diflufenican and it metabolites AE B107137 (DFF-acid) and AE 0542291 (DFF-amide) in surface water (PEC_{sw}) and sediment (PEC_{sed}) were calculated for the use in winter cereals in Europe, employing the tiered FOCUS Surface Water approach. Calculations were also performed for use in spring cereals in Europe but are not considered here as they are not relevant for representative use of ACL+DFF SC 600 (500 + 100) G. All relevant entry routes of a compound into surface water (principally a combination of spray drift and runoff/erosion or drain flow) were considered in these calculations.

Intended GAPs for the use of diflufenican in winter cereals in Europe were analysed and consolidated according to regulatory and modelling requirements. As a result, one or more uses may be covered by a single modelling GAP row (DGR). The translation of the regulatory GAP for modelling purposes is shown in Table 9.2.5- 20.

Table 9.2.5- 20: GAP translation for modelling purposes

GAP group ID	GAP group name (DGR) and use IDs	Covered crop(s)	Growth stage	Max. apps	Interval (days)	Rate (kg a.s./ha)
DGR I	winter cereals I	winter cereals I	BBCH 00 - 09	1	-	1×0.07
DGR II	winter cereals II	winter cereals II	BBCH 00 - 13	1	-	1×0.035

The implementation of the modelling GAP at Steps 1-2 level is shown in Table 9.2.5- 21. One or more calculations (modelling tasks, PMT) are necessary to fully cover the use assessed. The number and name of the respective DGR is provided for easier reference.

Table 9.2.5- 21: FOCUS Steps 1-2 specific data for the GAPs assessed

Run IDs (DGR / PMT)	GAP group name (DGR)	Assessment name (PMT)	FOCUS crop (crop group)	Season	Crop cover
DGR I PMT I	winter cereals I	winter cereals I	cereals, winter (arable crops)	autumn (Oct. - Feb.)	min crop cover
DGR II PMT II	winter cereals II	winter cereals II	cereals, winter (arable crops)	autumn (Oct. - Feb.)	min crop cover

The implementation of the modelling GAP at Step 3 level is shown in the following tables. Please note that PMTs at Steps 1-2 and Step 3 do not necessarily fully correspond to each other due to inherent differences in the models. A 30d window starting either 7 days before or after emergence was used to simulate the post-emergence applications.

A summary of all Step 3 PMTs is provided in Table 9.2.5- 22. The detailed information on individual uses is given in Table 9.2.5- 23 and Table 9.2.5- 24 for pre-emergence use on winter cereals at 70 g a.s./ha (DGR I, PMT I), in Table 9.2.5- 25 and Table 9.2.5- 26 for post-emergence use on winter cereals at 70 g a.s./ha (DGR I, PMT II) in Table 9.2.5- 27 and Table 9.2.5- 28 for pre-emergence use on winter cereals at 35 g a.s./ha (DGR II, PMT III) and in Table 9.2.5- 29 and Table 9.2.5- 30 for post-emergence use on winter cereals at 35 g a.s./ha (DGR II, PMT IV).

Table 9.2.5- 22: Overview of FOCUS Step 3 assessments

Run IDs (DGR / PMT)	GAP group name (DGR)	Assessment name (PMT)	FOCUS crop (crop group)
DGR I PMT I	Winter cereals I, 70 g/ha	**Winter cereals I (pre-emergence) BBCH 0 - 9**	Cereals, winter (arable crops)
DGR I PMT II	Winter cereals I, 70 g/ha	**Winter cereals I (post-emergence) BBCH 10-13**	Cereals, winter (arable crops)
DGR II PMT III	Winter cereals I, 35 g/ha	**Winter cereals II (pre-emergence) BBCH 0 - 9**	Cereals, winter (arable crops)
DGR II PMT IV	Winter cereals I, 35 g/ha	**Winter cereals II (post-emergence) BBCH 10-13**	Cereals, winter (arable crops)

Winter Cereals full rate 70 g a.s./ha, pre-emergence

Table 9.2.5- 23: Summarised FOCUS Step 3 application data (PAT settings)

Crop	Scenario	Application window used in modelling
Winter cereals I (pre-emerg)	D1 Ditch/Stream	18-Sep - 18-Oct
	D2 Ditch/Stream	18-Oct - 17-Nov
	D3 Ditch	14-Nov - 14-Dec
	D4 Pond/Stream	15-Sep - 15-Oct
	D5 Pond/Stream	03-Nov - 03-Dec
	D6 Ditch	23-Nov - 23-Dec
	R1 Pond/Stream	05-Nov - 05-Dec
	R3 Stream	24-Nov - 24-Dec
	R4 Stream	03-Nov - 03-Dec

Table 9.2.5- 24: Full FOCUS Step 3 application data

Run IDs **GAP name (DGR)** **Assessment name (PMT)**	DGR I / PMT I Winter cereals I Winter cereals I (pre-emerg)
FOCUS model crop (crop group)	Cereals, winter (arable crops)
Use pattern	0.07 kg a.s./ha
Appl. method (Run-off CAM, depth inc.)	Ground spray (2- appln foliar linear, 4 cm)

PAT start date (relative to crop event or absolute)	7 days before emergence
PAT window range	30 days for all scenarios (min = 30 days)

Drainage scenarios	**PAT start/end date (Julian day)**	**Application date**	**Runoff scenarios**	**PAT start/end date (Julian day)**	**Application date**
D1 Ditch/Stream	18-Sep/18-Oct (261/291)	03-Oct	R1 Pond/Stream	05-Nov/05-Dec (309/339)	14-Nov
D2 Ditch/Stream	18-Oct/17-Nov (291/321)	03-Nov	R3 Stream	24-Nov/24-Dec (328/358)	05-Dec
D3 Ditch	14-Nov/14-Dec (318/348)	14-Nov	R4 Stream	03-Nov/03-Dec (307/337)	03-Nov
D4 Pond/Stream	15-Sep/15-Oct (258/288)	28-Sep			
D5 Pond/Stream	03-Nov/03-Dec (307/337)	27-Nov			
D6 Ditch	23-Nov/23-Dec (327/357)	06-Dec			

Winter Cereals full rate 70 g a.s./ha, post-emergence

Table 9.2.5- 25: Summarised FOCUS Step 3 application data (PAT settings)

Crop	**Scenario**	**Application window used in modelling**
Winter cereals I (post-emerg)	D1 Ditch/Stream	02-Oct - 01-Nov
	D2 Ditch/Stream	01-Nov - 01-Dec
	D3 Ditch	28-Nov - 28-Dec
	D4 Pond/Stream	29-Sep - 29-Oct
	D5 Pond/Stream	17-Nov - 17-Dec
	D6 Ditch	07-Dec - 06-Jan
	R1 Pond/Stream	19-Nov - 19-Dec
	R3 Stream	08-Dec - 07-Jan
	R4 Stream	17-Nov - 17-Dec

Table 9.2.5- 26: Full FOCUS Step 3 application data

Run IDs **GAP name (DGR)** **Assessment name (PMT)**	DGR I / PMT II Winter cereals I Winter cereals I (post-emerg)
FOCUS model crop (crop group)	Cereals, winter (arable crops)
Use pattern	0.07 kg a.s./ha
Appl. method (Run-off CAM, depth inc.)	Ground spray (2- appln foliar linear, 4 cm)
PAT start date (relative to crop event or absolute)	7 days after emergence
PAT window range	30 days for all scenarios (min = 30 days)

Drainage scenarios	**PAT start/end date (Julian day)**	**Application date**	**Runoff scenarios**	**PAT start/end date (Julian day)**	**Application date**
D1 Ditch/Stream	02-Oct/01-Nov (275/305)	03-Oct	R1 Pond/Stream	19-Nov/19-Dec (323/353)	19-Nov

D2 Ditch/Stream	01-Nov/01-Dec (305/335)	03-Nov	R3 Stream	08-Dec/07-Jan (342/7)	08-Dec
D3 Ditch	28-Nov/28-Dec (332/362)	28-Nov	R4 Stream	17-Nov/17-Dec (321/351)	10-Dec
D4 Pond/Stream	29-Sep/29-Oct (272/302)	29-Sep			
D5 Pond/Stream	17-Nov/17-Dec (321/351)	27-Nov			
D6 Ditch	07-Dec/06-Jan (341/6)	07-Dec			

Winter Cereals half rate 35 g a.s./ha, pre-emergence

Table 9.2.5- 27: Summarised FOCUS Step 3 application data (PAT settings)

Assessment name	Scenario	Application window used in modelling
Winter cereals II (post-emerg)	D1 Ditch/Stream D2 Ditch/Stream D3 Ditch D4 Pond/Stream D5 Pond/Stream D6 Ditch R1 Pond/Stream R3 Stream R4 Stream	18-Sep - 18-Oct 18-Oct - 17-Nov 14-Nov - 14-Dec 15-Sep - 15-Oct 03-Nov - 03-Dec 23-Nov - 23-Dec 05-Nov - 05-Dec 24-Nov - 24-Dec 03-Nov - 03-Dec

Table 9.2.5- 28: Full FOCUS Step 3 application data

Run IDs **GAP name (DGR)** **Assessment name (PMT)**	DGR II / PMT III Winter cereals II Winter cereals II (pre-emerg)
FOCUS model crop (crop group)	Cereals, winter (arable crops)
Use pattern	0.035 kg a.s./ha
Appl. method (Run-off CAM, depth inc.)	Ground spray (2- appln foliar linear, 4 cm)
PAT start date (relative to crop event or absolute)	7 days before emergence
PAT window range	30 days for all scenarios (min = 30 days)

Drainage scenarios	PAT start/end date (Julian day)	Application date	Runoff scenarios	PAT start/end date (Julian day)	Application date
D1 Ditch/Stream	18-Sep/18-Oct (261/291)	03-Oct	R1 Pond/Stream	05-Nov/05-Dec (309/339)	14-Nov
D2 Ditch/Stream	18-Oct/17-Nov (291/321)	03-Nov	R3 Stream	24-Nov/24-Dec (328/358)	05-Dec
D3 Ditch	14-Nov/14-Dec (318/348)	14-Nov	R4 Stream	03-Nov/03-Dec (307/337)	03-Nov
D4 Pond/Stream	15-Sep/15-Oct (258/288)	28-Sep			

D5 Pond/Stream	03-Nov/03-Dec (307/337)	27-Nov			
D6 Ditch	23-Nov/23-Dec (327/357)	06-Dec			

Winter Cereals full rate 35 g a.s./ha, post-emergence

Table 9.2.5- 29: Summarised FOCUS Step 3 application data (PAT settings)

Crop	Scenario	Application window used in modelling
Winter cereals II (post-emerg)	D1 Ditch/Stream D2 Ditch/Stream D3 Ditch D4 Pond/Stream D5 Pond/Stream D6 Ditch R1 Pond/Stream R3 Stream R4 Stream	02-Oct - 01-Nov 01-Nov - 01-Dec 28-Nov - 28-Dec 29-Sep - 29-Oct 17-Nov - 17-Dec 07-Dec - 06-Jan 19-Nov - 19-Dec 08-Dec - 07-Jan 17-Nov - 17-Dec

Table 9.2.5- 30: Full FOCUS Step 3 application data

Run IDs **GAP name (DGR)** **Assessment name (PMT)**	DGR II / PMT IV Winter cereals II Winter cereals II (post-emerg)
FOCUS model crop (crop group)	Cereals, winter (arable crops)
Use pattern	0.035 kg a.s./ha
Appl. method (Run-off CAM, depth inc.)	Ground spray (2- appln foliar linear, 4 cm)
PAT start date (relative to crop event or absolute)	7 days after emergence
PAT window range	30 days for all scenarios (min = 30 days)

Drainage scenarios	PAT start/end date (Julian day)	Application date	Runoff scenarios	PAT start/end date (Julian day)	Application date
D1 Ditch/Stream	02-Oct/01-Nov (275/305)	03-Oct	R1 Pond/Stream	19-Nov/19-Dec (323/353)	19-Nov
D2 Ditch/Stream	01-Nov/01-Dec (305/335)	03-Nov	R3 Stream	08-Dec/07-Jan (342/7)	08-Dec
D3 Ditch	28-Nov/28-Dec (332/362)	28-Nov	R4 Stream	17-Nov/17-Dec (321/351)	10-Dec
D4 Pond/Stream	29-Sep/29-Oct (272/302)	29-Sep			
D5 Pond/Stream	17-Nov/17-Dec (321/351)	27-Nov			
D6 Ditch	07-Dec/06-Jan (341/6)	07-Dec			

Standard procedures and settings were used for Steps 1-2 and 3 assessments. At Step 4 the following mitigation settings were used (see Table 9.2.5- 31 and Table 9.2.5- 32).

Table 9.2.5- 31: Mitigation approaches used

Buffer length	Mitigation type	Drift reduction nozzles
0 m	Spray drift	0 %, 50 %, 75 %, 90 %
5 m	Spray drift	
10 m	Spray drift & RunOff	
15 m	Spray drift & RunOff	
20 m	Spray drift & RunOff	

Table 9.2.5- 32: Runoff mitigation parameters used for the assessment

Fractional reduction in:		10 m, 15 m	20 m
Runoff:	**Volume**	0.60	0.80
	Flux	0.60	0.80
Erosion:	**Mass**	0.85	0.95
	Flux	0.85	0.95

Substance related parameters used for diflufenican and its metabolites in the calculations at FOCUS SW Steps 1-2 level are summarised in Table 9.2.5- 33 and at Step 3/4 level in Table 9.2.5- 34.

Table 9.2.5- 33: Substance parameters used at FOCUS Steps 1-2 level

Parameter	**Unit**	**Diflufenican**	**AE B107137 (DFF-acid)**	**AE 0542291 (DFF-amide)**
Molar mass	(g/mol)	394.3	283.21	282.22
Water solubility	(mg/L)	0.05	410	88
Koc	(mL/g)	3417	13	132
Degradation				
Soil	(d)	143.2	10.6	26.9
Total system	(d)	175	1000	1000
Water	(d)	175	76.2	1000
Sediment	(d)	1000	1000	1000
Max occurrence				
Water / sediment	(%)	100	45.9	0.01
Soil	(%)	100	16.8	26.3

Table 9.2.5- 34: Substance parameters used for diflufenican at Step 3/4 level

Parameter	**Unit**	**Parent**
Substance SWASH code		**Diflufenican** DFF
General Molar mass Water solubility (temp.) Vapour pressure (temp.)	 (g/mol) (mg/L) (Pa)	 394.3 0.05 (20 °C) 4.25E-06 (25 °C)
Crop processes Coefficient for uptake by plant (TSCF) Wash-off factor	 (-) (1/m)	 0 50
Sorption K_{OC} K_{OM} Freundlich exponent ($^1/_n$)	 (mL/g) (mL/g) (-)	 3417 1982 0.917
Transformation DT50 in soil	 (d)	 143.2

Parameter	Unit	Parent
temperature	(°C)	20
moisture content (pF)	(log(cm))	2
formation fraction in soil	(-)	-
DT50 in water	(d)	175
temperature	(°C)	20
formation fraction in water	(-)	-
DT50 in sediment	(d)	1000
temperature	(°C)	20
formation fraction in sediment	(-)	-
DT50 on canopy	(d)	10
Exponent for the effect of moisture		
PRZM and TOXSWA (Walker exp.)	(-)	0.7
MACRO (calibrated value)	(-)	0.49
Effect of temperature		
TOXSWA (molar activation energy)	(kJ/mol)	65.4
MACRO (effect of temperature)	(1/K)	0.0948
PRZM (Q_{10})	(-)	2.58

The PEC values were calculated for diflufenican and its metabolites according to the equations implemented in the “STEPS 1-2 in FOCUS” calculator (see Table 9.2.5- 35 and Table 9.2.5- 36 for diflufenican, Table 9.2.5- 37 and Table 9.2.5- 38 for AE B107137 (DFF-acid), and Table 9.2.5- 39 and Table 9.2.5- 40) for AE B107137 (DFF-acid).

Table 9.2.5- 35: FOCUS Step 1-2 results for diflufenican, use winter cereals I (DGR I / PMT I; GAP name winter cereals I) 70 g/ha

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*		Dominant entry route	7d-$PEC_{sw,twa}$ (µg/L)**	21d-$PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*	
Step 1	-	4.8434	-	Run-Off/Drain.	4.2940	4.1535	146.88	-
Step 2								
N-Europe S-Europe	Oct. - Feb. (Autumn)	2.2201 1.8081	* *	Run-Off/Drain. Run-Off/Drain.	2.1628 1.7537	2.1411 1.7358	74.256 60.191	* *

* Single applications marked
** TWA-interval as required by ecotox

Table 9.2.5- 36: FOCUS Step 1-2 results for diflufenican, use winter cereals II (DGR II / PMT II; GAP name winter cereals II) 35 g/ha

Scenario FOCUS	Waterbody	Max PEC$_{sw}$ (µg/L)*	Dominant entry route	7d-PEC$_{sw,twa}$ (µg/L)**	21d-PEC$_{sw,twa}$ (µg/L)**	Max PEC$_{sed}$ (µg/kg)*
Step 1	-	2.4217 -	RunOff/Drain.	2.1470	2.0767	73.439 -
Step 2						
N-Europe S-Europe	Oct. - Feb. (Autumn)	1.1100 * 0.9041 *	RunOff/Drain. RunOff/Drain.	1.0814 0.8769	1.0706 0.8679	37.128 * 30.095 *

* Single applications marked
** TWA-interval as required by ecotox

Table 9.2.5- 37: FOCUS Step 1-2 results for AE B107137 (DFF-acid), use winter cereals I (DGR I / PMT I; GAP name winter cereals I) 70 g as./ha

Scenario FOCUS	Waterbody	Max PEC$_{sw}$ (µg/L)*	Dominant entry route	7d-PEC$_{sw,twa}$ (µg/L)**	21d-PEC$_{sw,twa}$ (µg/L)**	Max PEC$_{sed}$ (µg/kg)*
Step 1	-	10.541 -	RunOff/Drain.	10.512	10.461	1.3690 -
Step 2						
N-Europe S-Europe	Oct. - Feb. (Autumn)	4.9759 * 4.0212 *	RunOff/Drain. RunOff/Drain.	4.8216 3.8963	4.5346 3.6643	0.6463 * 0.5223 *

* Single applications marked
** TWA-interval as required by ecotox

Table 9.2.5- 38: FOCUS Step 1-2 results for AE B107137 (DFF-acid), use winter cereals II (DGR II / PMT II; GAP name winter cereals II) 35 g as./ha

Scenario FOCUS	Waterbody	Max PEC$_{sw}$ (µg/L)*	Dominant entry route	7d-PEC$_{sw,twa}$ (µg/L)**	21d-PEC$_{sw,twa}$ (µg/L)**	Max PEC$_{sed}$ (µg/kg)*
Step 1	-	5.2707 -	RunOff/Drain.	5.2562	5.2307	0.6845 -
Step 2						
N-Europe S-Europe	Oct. - Feb. (Autumn)	2.4880 * 2.0106 *	RunOff/Drain. RunOff/Drain.	2.4108 1.9482	2.2673 1.8322	0.3231 * 0.2611 *

* Single applications marked
** TWA-interval as required by ecotox

Table 9.2.5- 39: FOCUS Step 1-2 results for AE 0542291 (DFF-amide), use winter cereals I (DGR I / PMT I; GAP name winter cereals I) 70 g as./ha

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*		Dominant entry route	7d-$PEC_{sw,twa}$ (µg/L)**	21d-$PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*	
Step 1	-	3.7364	-	RunOff/Drain.	3.7274	3.7094	4.9320	-
Step 2								
N-Europe S-Europe	Oct. - Feb. (Autumn)	1.6853 1.3483	* *	RunOff/Drain. RunOff/Drain.	1.6812 1.3450	1.6731 1.3385	2.2246 1.7797	* *

* Single applications marked
** TWA-interval as required by ecotox

Table 9.2.5- 40: FOCUS Step 1-2 results for AE 0542291 (DFF-amide), use winter cereals II (DGR II / PMT II; GAP name winter cereals II) 35 g as./ha

Scenario FOCUS	Waterbody	Max PEC_{sw} (µg/L)*		Dominant entry route	7d-$PEC_{sw,twa}$ (µg/L)**	21d-$PEC_{sw,twa}$ (µg/L)**	Max PEC_{sed} (µg/kg)*	
Step 1	-	1.8682	-	RunOff/Drain.	1.8637	1.8547	2.4660	-
Step 2								
N-Europe S-Europe	Oct. - Feb. (Autumn)	0.8427 0.6741	* *	RunOff/Drain. RunOff/Drain.	0.8406 0.6725	0.8366 0.6693	1.1123 0.8899	* *

* Single applications marked
** TWA-interval as required by ecotox

Step 3 calculations were conducted for diflufenican employing the models of the FOCUS SW suite. Reported values represent loadings *via* all relevant entry routes (see Table 9.2.5- 41 to Table 9.2.5- 44).

Table 9.2.5- 41: FOCUS Step 3 results for diflufenican, use winter cereals I (pre-emerg) (DGR I / PMT I; GAP name winter cereals I) 70 g/ha

Scenario FOCUS	Waterbody	Max PEC$_{sw}$ (µg/L)*		Dominant entry route	7d-PEC$_{sw,twa}$ (µg/L)**	21d-PEC$_{sw,twa}$ (µg/L)**	Max PEC$_{sed}$ (µg/kg)*	
Step 3								
D1	Ditch	0.4483	*	Spray drift	0.3372	0.2496	2.0970	*
D1	Stream	0.3906	*	Spray drift	0.0499	0.0414	0.9129	*
D2	Ditch	0.4928	*	Spray drift	0.2450	0.1403	2.4630	*
D2	Stream	0.3825	*	Spray drift	0.0540	0.0451	1.2530	*
D3	Ditch	0.4403	*	Spray drift	0.0495	0.0168	0.2381	*
D4	Pond	0.0156	*	Drainage	0.0145	0.0125	0.2087	*
D4	Stream	0.3817	*	Spray drift	0.0157	0.0052	0.0819	*
D5	Pond	0.0153	*	Spray drift	0.0138	0.0120	0.1425	*
D5	Stream	0.4118	*	Spray drift	0.0224	0.0075	0.1152	*
D6	Ditch	0.4452	*	Spray drift	0.3040	0.1228	1.1800	*
R1	Pond	0.0349	*	Runoff	0.0319	0.0281	0.5081	*
R1	Stream	0.2902	*	Spray drift	0.0308	0.0103	0.5476	*
R3	Stream	0.4071	*	Spray drift	0.0201	0.0124	0.5781	*
R4	Stream	0.2920	*	Spray drift	0.0339	0.0114	0.4345	*

* Single applications marked
** TWA-interval as required by ecotox

Table 9.2.5- 42: FOCUS Step 3 results for diflufenican, use winter cereals I (post-emerg) (DGR I / PMT II; GAP name winter cereals I) 70 g/ha

Scenario FOCUS	Waterbody	Max PEC$_{sw}$ (µg/L)*		Dominant entry route	7d-PEC$_{sw,twa}$ (µg/L)**	21d-PEC$_{sw,twa}$ (µg/L)**	Max PEC$_{sed}$ (µg/kg)*	
Step 3								
D1	Ditch	0.4485	*	Spray drift	0.3374	0.2499	2.1610	*
D1	Stream	0.3906	*	Spray drift	0.0514	0.0428	0.9491	*
D2	Ditch	0.4903	*	Spray drift	0.2428	0.1381	2.3910	*
D2	Stream	0.3813	*	Spray drift	0.0535	0.0436	1.2060	*
D3	Ditch	0.4399	*	Spray drift	0.0460	0.0156	0.2227	*
D4	Pond	0.0152	*	Spray drift	0.0139	0.0120	0.2031	*
D4	Stream	0.3817	*	Spray drift	0.0157	0.0052	0.0819	*
D5	Pond	0.0153	*	Spray drift	0.0138	0.0120	0.1408	*
D5	Stream	0.4118	*	Spray drift	0.0224	0.0075	0.1152	*
D6	Ditch	0.4453	*	Spray drift	0.3064	0.1207	1.1910	*
R1	Pond	0.0357	*	Runoff	0.0326	0.0287	0.5141	*
R1	Stream	0.2902	*	Spray drift	0.0312	0.0105	0.5583	*
R3	Stream	0.4071	*	Spray drift	0.0200	0.0141	0.5770	*
R4	Stream	0.2878	*	Spray drift	0.0349	0.0136	0.5066	*

* Single applications marked
** TWA-interval as required by ecotox

Table 9.2.5- 43: FOCUS Step 3 results for diflufenican, use winter cereals II (pre-emerg) (DGR II / PMT III; GAP name winter cereals II) 35 g/ha

Scenario FOCUS	Waterbody	Max PEC$_{sw}$ (µg/L)*		Dominant entry route	7d-PEC$_{sw,twa}$ (µg/L)**	21d-PEC$_{sw,twa}$ (µg/L)**	Max PEC$_{sed}$ (µg/kg)*	
Step 3								
D1	Ditch	0.2233	*	Spray drift	0.1672	0.1228	0.9897	*
D1	Stream	0.1954	*	Spray drift	0.0247	0.0118	0.2654	*
D2	Ditch	0.2413	*	Spray drift	0.1169	0.0636	1.0700	*
D2	Stream	0.1889	*	Spray drift	0.0229	0.0186	0.5227	*
D3	Ditch	0.2199	*	Spray drift	0.0247	0.0084	0.1195	*
D4	Pond	0.0076	*	Spray drift	0.0068	0.0059	0.1018	*
D4	Stream	0.1910	*	Spray drift	0.0078	0.0026	0.0411	*
D5	Pond	0.0077	*	Spray drift	0.0069	0.0060	0.0726	*
D5	Stream	0.2060	*	Spray drift	0.0112	0.0038	0.0578	*
D6	Ditch	0.2224	*	Spray drift	0.1514	0.0609	0.5984	*
R1	Pond	0.0170	*	Runoff	0.0155	0.0136	0.2547	*
R1	Stream	0.1452	*	Spray drift	0.0149	0.0050	0.2845	*
R3	Stream	0.2037	*	Spray drift	0.0097	0.0060	0.3144	*
R4	Stream	0.1461	*	Spray drift	0.0162	0.0054	0.2291	*

* Single applications marked
** TWA-interval as required by ecotox

Table 9.2.5- 44: FOCUS Step 3 results for diflufenican, use winter cereals II (post-emerg) (DGR II / PMT IV; GAP name winter cereals II) 35 g/ha

Scenario FOCUS	Waterbody	Max PEC$_{sw}$ (µg/L)*		Dominant entry route	7d-PEC$_{sw,twa}$ (µg/L)**	21d-PEC$_{sw,twa}$ (µg/L)**	Max PEC$_{sed}$ (µg/kg)*	
Step 3								
D1	Ditch	0.2233	*	Spray drift	0.1672	0.1228	0.9926	*
D1	Stream	0.1954	*	Spray drift	0.0247	0.0125	0.2805	*
D2	Ditch	0.2402	*	Spray drift	0.1159	0.0625	1.0390	*
D2	Stream	0.1884	*	Spray drift	0.0224	0.0179	0.4998	*
D3	Ditch	0.2197	*	Spray drift	0.0230	0.0078	0.1118	*
D4	Pond	0.0076	*	Spray drift	0.0068	0.0059	0.0992	*
D4	Stream	0.1910	*	Spray drift	0.0078	0.0026	0.0411	*
D5	Pond	0.0077	*	Spray drift	0.0069	0.0060	0.0718	*
D5	Stream	0.2060	*	Spray drift	0.0112	0.0038	0.0578	*
D6	Ditch	0.2224	*	Spray drift	0.1526	0.0599	0.6039	*
R1	Pond	0.0173	*	Runoff	0.0158	0.0139	0.2575	*
R1	Stream	0.1452	*	Spray drift	0.0151	0.0051	0.2898	*
R3	Stream	0.2037	*	Spray drift	0.0096	0.0068	0.3138	*
R4	Stream	0.1440	*	Spray drift	0.0166	0.0065	0.2666	*

* Single applications marked
** TWA-interval as required by ecotox

FOCUS Step 4 calculations considering various mitigation measures for runoff and spray drift were conducted based on the Step 3 results (see Table 9.2.5- 45 to Table 9.2.5- 48 for PEC$_{sw}$ values and Table 9.2.5- 49 to Table 9.2.5- 52 for PEC$_{sed}$ values).

Predicted environmental concentrations in surface water (PEC_{SW})

Table 9.2.5- 45: Single application FOCUS Step 4 results for diflufenican, use winter cereals I (pre-emerg) (DGR I / PMT I; GAP name winter cereals I) 70 g/ha

PECsw (µg/L)	Scenario	STEP 4 Diflufenican							
Nozzle reduction	Vegetated strip (m)	None	None	None	None	None	10m low	10m low	20m high
	No spray buffer (m)	0 m	5 m	10 m	15 m	20 m	10 m	15 m	20 m
None	D1 Ditch	0.4483	0.1227	0.1103	0.1103	0.1103	0.1103	0.1103	0.1103
50 %		0.2249	0.1103	0.1103	0.1103	0.1103	0.1103	0.1103	0.1103
75 %		0.1132	0.1103	0.1103	0.1103	0.1103	0.1103	0.1103	0.1103
90 %		0.1103	0.1103	0.1103	0.1103	0.1103	0.1103	0.1103	0.1103
None	D1 Stream	0.3906	0.1427	0.0757	0.0697	0.0697	0.0757	0.0697	0.0697
50 %		0.1953	0.0714	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697
75 %		0.0976	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697
90 %		0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697	0.0697
None	D2 Ditch	0.4928	0.2557	0.2557	0.2557	0.2557	0.2557	0.2557	0.2557
50 %		0.2706	0.2557	0.2557	0.2557	0.2557	0.2557	0.2557	0.2557
75 %		0.2557	0.2557	0.2557	0.2557	0.2557	0.2557	0.2557	0.2557
90 %		0.2557	0.2557	0.2557	0.2557	0.2557	0.2557	0.2557	0.2557
None	D2 Stream	0.3825	0.1612	0.1612	0.1612	0.1612	0.1612	0.1612	0.1612
50 %		0.2023	0.1612	0.1612	0.1612	0.1612	0.1612	0.1612	0.1612
75 %		0.1612	0.1612	0.1612	0.1612	0.1612	0.1612	0.1612	0.1612
90 %		0.1612	0.1612	0.1612	0.1612	0.1612	0.1612	0.1612	0.1612
None	D3 Ditch	0.4403	0.1194	0.0633	0.0430	0.0329	0.0633	0.0430	0.0329
50 %		0.2201	0.0597	0.0316	0.0215	0.0165	0.0316	0.0215	0.0165
75 %		0.1100	0.0298	0.0158	0.0108	0.0082	0.0158	0.0108	0.0082
90 %		0.0440	0.0119	0.0063	0.0043	0.0033	0.0063	0.0043	0.0033
None	D4 Pond	0.0156	0.0150	0.0137	0.0130	0.0126	0.0137	0.0130	0.0126
50 %		0.0131	0.0127	0.0121	0.0118	0.0116	0.0121	0.0118	0.0116
75 %		0.0118	0.0116	0.0113	0.0112	0.0111	0.0113	0.0112	0.0111
90 %		0.0110	0.0110	0.0109	0.0108	0.0108	0.0109	0.0108	0.0108
None	D4 Stream	0.3817	0.1395	0.0740	0.0523	0.0523	0.0740	0.0523	0.0523
50 %		0.1908	0.0697	0.0523	0.0523	0.0523	0.0523	0.0523	0.0523
75 %		0.0954	0.0523	0.0523	0.0523	0.0523	0.0523	0.0523	0.0523
90 %		0.0523	0.0523	0.0523	0.0523	0.0523	0.0523	0.0523	0.0523
None	D5 Pond	0.0153	0.0133	0.0095	0.0076	0.0064	0.0095	0.0076	0.0064
50 %		0.0077	0.0067	0.0048	0.0039	0.0033	0.0048	0.0039	0.0033
75 %		0.0039	0.0034	0.0024	0.0020	0.0019	0.0024	0.0020	0.0019
90 %		0.0019	0.0018	0.0018	0.0017	0.0017	0.0018	0.0017	0.0017
None	D5 Stream	0.4118	0.1505	0.0798	0.0545	0.0415	0.0798	0.0545	0.0415

PECsw (µg/L)	**Scenario**	**STEP 4 Diflufenican**							
Nozzle reduction	Vegetated strip (m)	None	None	None	None	None	10m low	10m low	20m high
	No spray buffer (m)	0 m	5 m	10 m	15 m	20 m	10 m	15 m	20 m
50 %		0.2059	0.0752	0.0399	0.0272	0.0207	0.0399	0.0272	0.0207
75 %		0.1029	0.0376	0.0200	0.0143	0.0143	0.0200	0.0143	0.0143
90 %		0.0411	0.0150	0.0143	0.0143	0.0143	0.0143	0.0143	0.0143
None	D6 Ditch	0.4452	0.1652	0.1652	0.1652	0.1652	0.1652	0.1652	0.1652
50 %		0.2226	0.1652	0.1652	0.1652	0.1652	0.1652	0.1652	0.1652
75 %		0.1652	0.1652	0.1652	0.1652	0.1652	0.1652	0.1652	0.1652
90 %		0.1652	0.1652	0.1652	0.1652	0.1652	0.1652	0.1652	0.1652
None	R1 Pond	0.0349	0.0341	0.0325	0.0317	0.0312	0.0155	0.0147	0.0085
50 %		0.0317	0.0313	0.0306	0.0302	0.0299	0.0135	0.0131	0.0071
75 %		0.0302	0.0300	0.0296	0.0294	0.0293	0.0126	0.0124	0.0065
90 %		0.0292	0.0292	0.0290	0.0289	0.0289	0.0120	0.0119	0.0061
None	R1 Stream	0.2902	0.1791	0.1791	0.1791	0.1791	0.0801	0.0801	0.0417
50 %		0.1791	0.1791	0.1791	0.1791	0.1791	0.0801	0.0801	0.0417
75 %		0.1791	0.1791	0.1791	0.1791	0.1791	0.0801	0.0801	0.0417
90 %		0.1791	0.1791	0.1791	0.1791	0.1791	0.0801	0.0801	0.0417
None	R3 Stream	0.4071	0.1830	0.1830	0.1830	0.1830	0.0824	0.0824	0.0431
50 %		0.2035	0.1830	0.1830	0.1830	0.1830	0.0824	0.0824	0.0431
75 %		0.1830	0.1830	0.1830	0.1830	0.1830	0.0824	0.0824	0.0431
90 %		0.1830	0.1830	0.1830	0.1830	0.1830	0.0824	0.0824	0.0431
None	R4 Stream	0.2920	0.2542	0.2542	0.2542	0.2542	0.1147	0.1147	0.0599
50 %		0.2542	0.2542	0.2542	0.2542	0.2542	0.1147	0.1147	0.0599
75 %		0.2542	0.2542	0.2542	0.2542	0.2542	0.1147	0.1147	0.0599
90 %		0.2542	0.2542	0.2542	0.2542	0.2542	0.1147	0.1147	0.0599

Table 9.2.5- 46: Single application FOCUS Step 4 results for diflufenican, use winter cereals I (post-emerg) (DGR I / PMT II; GAP name winter cereals I) 70 g/ha

PECsw (µg/L)	**Scenario**	**STEP 4 Diflufenican**							
Nozzle reduction	Vegetated strip (m)	None	None	None	None	None	10m low	10m low	20m high
	No spray buffer (m)	0 m	5 m	10 m	15 m	20 m	10 m	15 m	20 m
None	D1 Ditch	0.4485	0.1229	0.1122	0.1122	0.1122	0.1122	0.1122	0.1122
50 %		0.2251	0.1122	0.1122	0.1122	0.1122	0.1122	0.1122	0.1122
75 %		0.1134	0.1122	0.1122	0.1122	0.1122	0.1122	0.1122	0.1122

PECsw (µg/L)	Scenario	STEP 4 Diflufenican							
Nozzle reduction	Vegetated strip (m)	None	None	None	None	None	10m low	10m low	20m high
	No spray buffer (m)	0 m	5 m	10 m	15 m	20 m	10 m	15 m	20 m
90 %		0.1122	0.1122	0.1122	0.1122	0.1122	0.1122	0.1122	0.1122
None	D1 Stream	0.3906	0.1427	0.0758	0.0708	0.0708	0.0758	0.0708	0.0708
50 %		0.1953	0.0714	0.0708	0.0708	0.0708	0.0708	0.0708	0.0708
75 %		0.0976	0.0708	0.0708	0.0708	0.0708	0.0708	0.0708	0.0708
90 %		0.0708	0.0708	0.0708	0.0708	0.0708	0.0708	0.0708	0.0708
None	D2 Ditch	0.4903	0.2601	0.2601	0.2601	0.2601	0.2601	0.2601	0.2601
50 %		0.2681	0.2601	0.2601	0.2601	0.2601	0.2601	0.2601	0.2601
75 %		0.2601	0.2601	0.2601	0.2601	0.2601	0.2601	0.2601	0.2601
90 %		0.2601	0.2601	0.2601	0.2601	0.2601	0.2601	0.2601	0.2601
None	D2 Stream	0.3813	0.1639	0.1639	0.1639	0.1639	0.1639	0.1639	0.1639
50 %		0.2011	0.1639	0.1639	0.1639	0.1639	0.1639	0.1639	0.1639
75 %		0.1639	0.1639	0.1639	0.1639	0.1639	0.1639	0.1639	0.1639
90 %		0.1639	0.1639	0.1639	0.1639	0.1639	0.1639	0.1639	0.1639
None	D3 Ditch	0.4399	0.1193	0.0632	0.0430	0.0329	0.0632	0.0430	0.0329
50 %		0.2199	0.0596	0.0316	0.0215	0.0164	0.0316	0.0215	0.0164
75 %		0.1099	0.0298	0.0158	0.0107	0.0082	0.0158	0.0107	0.0082
90 %		0.0439	0.0119	0.0063	0.0043	0.0033	0.0063	0.0043	0.0033
None	D4 Pond	0.0152	0.0143	0.0130	0.0124	0.0120	0.0130	0.0124	0.0120
50 %		0.0124	0.0121	0.0114	0.0111	0.0109	0.0114	0.0111	0.0109
75 %		0.0111	0.0110	0.0106	0.0105	0.0104	0.0106	0.0105	0.0104
90 %		0.0104	0.0103	0.0102	0.0101	0.0101	0.0102	0.0101	0.0101
None	D4 Stream	0.3817	0.1395	0.0740	0.0505	0.0504	0.0740	0.0505	0.0504
50 %		0.1908	0.0697	0.0504	0.0504	0.0504	0.0504	0.0504	0.0504
75 %		0.0954	0.0504	0.0504	0.0504	0.0504	0.0504	0.0504	0.0504
90 %		0.0504	0.0504	0.0504	0.0504	0.0504	0.0504	0.0504	0.0504
None	D5 Pond	0.0153	0.0133	0.0095	0.0076	0.0064	0.0095	0.0076	0.0064
50 %		0.0077	0.0067	0.0048	0.0038	0.0032	0.0048	0.0038	0.0032
75 %		0.0039	0.0034	0.0024	0.0019	0.0017	0.0024	0.0019	0.0017
90 %		0.0017	0.0017	0.0016	0.0015	0.0015	0.0016	0.0015	0.0015
None	D5 Stream	0.4118	0.1505	0.0798	0.0545	0.0415	0.0798	0.0545	0.0415
50 %		0.2059	0.0752	0.0399	0.0272	0.0207	0.0399	0.0272	0.0207
75 %		0.1029	0.0376	0.0200	0.0136	0.0135	0.0200	0.0136	0.0135
90 %		0.0411	0.0150	0.0135	0.0135	0.0135	0.0135	0.0135	0.0135
None	D6 Ditch	0.4453	0.1701	0.1701	0.1701	0.1701	0.1701	0.1701	0.1701
50 %		0.2226	0.1701	0.1701	0.1701	0.1701	0.1701	0.1701	0.1701
75 %		0.1701	0.1701	0.1701	0.1701	0.1701	0.1701	0.1701	0.1701

PECsw (µg/L)	**Scenario**	**STEP 4 Diflufenican**							
Nozzle reduction	Vegetated strip (m)	None	None	None	None	None	10m low	10m low	20m high
	No spray buffer (m)	0 m	5 m	10 m	15 m	20 m	10 m	15 m	20 m
90 %		0.1701	0.1701	0.1701	0.1701	0.1701	0.1701	0.1701	0.1701
None	R1 Pond	0.0357	0.0348	0.0331	0.0323	0.0318	0.0159	0.0151	0.0087
50 %		0.0323	0.0319	0.0311	0.0307	0.0304	0.0138	0.0134	0.0073
75 %		0.0307	0.0305	0.0301	0.0299	0.0297	0.0128	0.0126	0.0066
90 %		0.0297	0.0296	0.0294	0.0294	0.0293	0.0122	0.0121	0.0062
None	R1 Stream	0.2902	0.1809	0.1809	0.1809	0.1809	0.0810	0.0810	0.0421
50 %		0.1809	0.1809	0.1809	0.1809	0.1809	0.0810	0.0810	0.0421
75 %		0.1809	0.1809	0.1809	0.1809	0.1809	0.0810	0.0810	0.0421
90 %		0.1809	0.1809	0.1809	0.1809	0.1809	0.0810	0.0810	0.0421
None	R3 Stream	0.4071	0.1818	0.1818	0.1818	0.1818	0.0819	0.0819	0.0428
50 %		0.2035	0.1818	0.1818	0.1818	0.1818	0.0819	0.0819	0.0428
75 %		0.1818	0.1818	0.1818	0.1818	0.1818	0.0819	0.0819	0.0428
90 %		0.1818	0.1818	0.1818	0.1818	0.1818	0.0819	0.0819	0.0428
None	R4 Stream	0.2878	0.2595	0.2595	0.2595	0.2595	0.1171	0.1171	0.0612
50 %		0.2595	0.2595	0.2595	0.2595	0.2595	0.1171	0.1171	0.0612
75 %		0.2595	0.2595	0.2595	0.2595	0.2595	0.1171	0.1171	0.0612
90 %		0.2595	0.2595	0.2595	0.2595	0.2595	0.1171	0.1171	0.0612

Table 9.2.5-47: Single application FOCUS Step 4 results for diflufenican, use winter cereals II (pre-emerg) (DGR II / PMT III; GAP name winter cereals II) 35 g/ha

PECsw (µg/L)	**Scenario**	**STEP 4 Diflufenican**							
Nozzle reduction	Vegetated strip (m)	None	None	None	None	None	10m low	10m low	20m high
	No spray buffer (m)	0 m	5 m	10 m	15 m	20 m	10 m	15 m	20 m
None	D1 Ditch	0.2233	0.0607	0.0398	0.0398	0.0398	0.0398	0.0398	0.0398
50 %		0.1117	0.0398	0.0398	0.0398	0.0398	0.0398	0.0398	0.0398
75 %		0.0559	0.0398	0.0398	0.0398	0.0398	0.0398	0.0398	0.0398
90 %		0.0398	0.0398	0.0398	0.0398	0.0398	0.0398	0.0398	0.0398
None	D1 Stream	0.1954	0.0712	0.0377	0.0257	0.0252	0.0377	0.0257	0.0252
50 %		0.0977	0.0356	0.0252	0.0252	0.0252	0.0252	0.0252	0.0252
75 %		0.0488	0.0252	0.0252	0.0252	0.0252	0.0252	0.0252	0.0252
90 %		0.0252	0.0252	0.0252	0.0252	0.0252	0.0252	0.0252	0.0252
None	D2 Ditch	0.2413	0.1098	0.1098	0.1098	0.1098	0.1098	0.1098	0.1098

PECsw (µg/L)	**Scenario**	**STEP 4 Diflufenican**							
Nozzle reduction	Vegetated strip (m)	None	None	None	None	None	10m low	10m low	20m high
	No spray buffer (m)	0 m	5 m	10 m	15 m	20 m	10 m	15 m	20 m
50 %		0.1303	0.1098	0.1098	0.1098	0.1098	0.1098	0.1098	0.1098
75 %		0.1098	0.1098	0.1098	0.1098	0.1098	0.1098	0.1098	0.1098
90 %		0.1098	0.1098	0.1098	0.1098	0.1098	0.1098	0.1098	0.1098
None	D2 Stream	0.1889	0.0743	0.0693	0.0693	0.0693	0.0693	0.0693	0.0693
50 %		0.0987	0.0693	0.0693	0.0693	0.0693	0.0693	0.0693	0.0693
75 %		0.0693	0.0693	0.0693	0.0693	0.0693	0.0693	0.0693	0.0693
90 %		0.0693	0.0693	0.0693	0.0693	0.0693	0.0693	0.0693	0.0693
None	D3 Ditch	0.2199	0.0597	0.0316	0.0215	0.0163	0.0316	0.0215	0.0163
50 %		0.1099	0.0298	0.0158	0.0108	0.0081	0.0158	0.0108	0.0081
75 %		0.0549	0.0149	0.0079	0.0054	0.0041	0.0079	0.0054	0.0041
90 %		0.0220	0.0060	0.0032	0.0021	0.0016	0.0032	0.0021	0.0016
None	D4 Pond	0.0076	0.0068	0.0062	0.0059	0.0057	0.0062	0.0059	0.0057
50 %		0.0059	0.0057	0.0054	0.0052	0.0051	0.0054	0.0052	0.0051
75 %		0.0052	0.0052	0.0050	0.0049	0.0049	0.0050	0.0049	0.0049
90 %		0.0049	0.0048	0.0048	0.0047	0.0047	0.0048	0.0047	0.0047
None	D4 Stream	0.1910	0.0696	0.0368	0.0251	0.0237	0.0368	0.0251	0.0237
50 %		0.0955	0.0348	0.0237	0.0237	0.0237	0.0237	0.0237	0.0237
75 %		0.0477	0.0237	0.0237	0.0237	0.0237	0.0237	0.0237	0.0237
90 %		0.0237	0.0237	0.0237	0.0237	0.0237	0.0237	0.0237	0.0237
None	D5 Pond	0.0077	0.0066	0.0048	0.0038	0.0032	0.0048	0.0038	0.0032
50 %		0.0039	0.0033	0.0024	0.0019	0.0016	0.0024	0.0019	0.0016
75 %		0.0019	0.0017	0.0012	0.0010	0.0008	0.0012	0.0010	0.0008
90 %		0.0008	0.0008	0.0008	0.0007	0.0007	0.0008	0.0007	0.0007
None	D5 Stream	0.2060	0.0750	0.0397	0.0271	0.0206	0.0397	0.0271	0.0206
50 %		0.1030	0.0375	0.0199	0.0135	0.0103	0.0199	0.0135	0.0103
75 %		0.0515	0.0188	0.0099	0.0068	0.0063	0.0099	0.0068	0.0063
90 %		0.0206	0.0075	0.0063	0.0063	0.0063	0.0063	0.0063	0.0063
None	D6 Ditch	0.2224	0.0720	0.0720	0.0720	0.0720	0.0720	0.0720	0.0720
50 %		0.1112	0.0720	0.0720	0.0720	0.0720	0.0720	0.0720	0.0720
75 %		0.0720	0.0720	0.0720	0.0720	0.0720	0.0720	0.0720	0.0720
90 %		0.0720	0.0720	0.0720	0.0720	0.0720	0.0720	0.0720	0.0720
None	R1 Pond	0.0170	0.0165	0.0158	0.0154	0.0151	0.0076	0.0072	0.0041
50 %		0.0154	0.0152	0.0148	0.0146	0.0145	0.0066	0.0064	0.0035
75 %		0.0146	0.0145	0.0143	0.0142	0.0142	0.0061	0.0060	0.0031
90 %		0.0142	0.0141	0.0140	0.0140	0.0140	0.0058	0.0058	0.0029
None	R1 Stream	0.1452	0.0858	0.0858	0.0858	0.0858	0.0384	0.0384	0.0200

PECsw (µg/L)	Scenario	STEP 4 Diflufenican							
Nozzle reduction	Vegetated strip (m)	None	None	None	None	None	10m low	10m low	20m high
	No spray buffer (m)	0 m	5 m	10 m	15 m	20 m	10 m	15 m	20 m
50 %		0.0858	0.0858	0.0858	0.0858	0.0858	0.0384	0.0384	0.0200
75 %		0.0858	0.0858	0.0858	0.0858	0.0858	0.0384	0.0384	0.0200
90 %		0.0858	0.0858	0.0858	0.0858	0.0858	0.0384	0.0384	0.0200
None	R3 Stream	0.2037	0.0867	0.0867	0.0867	0.0867	0.0393	0.0390	0.0204
50 %		0.1018	0.0867	0.0867	0.0867	0.0867	0.0390	0.0390	0.0204
75 %		0.0867	0.0867	0.0867	0.0867	0.0867	0.0390	0.0390	0.0204
90 %		0.0867	0.0867	0.0867	0.0867	0.0867	0.0390	0.0390	0.0204
None	R4 Stream	0.1461	0.1214	0.1214	0.1214	0.1214	0.0548	0.0548	0.0286
50 %		0.1214	0.1214	0.1214	0.1214	0.1214	0.0548	0.0548	0.0286
75 %		0.1214	0.1214	0.1214	0.1214	0.1214	0.0548	0.0548	0.0286
90 %		0.1214	0.1214	0.1214	0.1214	0.1214	0.0548	0.0548	0.0286

Table 9.2.5- 48: Single application FOCUS Step 4 results for diflufenican, use winter cereals II (post-emerg) (DGR II / PMT IV; GAP name winter cereals II) 35 g/ha

PECsw (µg/L)	Scenario	STEP 4 Diflufenican							
Nozzle reduction	Vegetated strip (m)	None	None	None	None	None	10m low	10m low	20m high
	No spray buffer (m)	0 m	5 m	10 m	15 m	20 m	10 m	15 m	20 m
None	D1 Ditch	0.2233	0.0607	0.0408	0.0408	0.0408	0.0408	0.0408	0.0408
50 %		0.1117	0.0408	0.0408	0.0407	0.0407	0.0408	0.0407	0.0407
75 %		0.0559	0.0408	0.0407	0.0407	0.0407	0.0407	0.0407	0.0407
90 %		0.0408	0.0407	0.0407	0.0407	0.0407	0.0407	0.0407	0.0407
None	D1 Stream	0.1954	0.0712	0.0377	0.0258	0.0258	0.0377	0.0258	0.0258
50 %		0.0977	0.0356	0.0258	0.0258	0.0258	0.0258	0.0258	0.0258
75 %		0.0488	0.0258	0.0258	0.0258	0.0258	0.0258	0.0258	0.0258
90 %		0.0258	0.0258	0.0258	0.0258	0.0258	0.0258	0.0258	0.0258
None	D2 Ditch	0.2402	0.1118	0.1118	0.1118	0.1118	0.1118	0.1118	0.1118
50 %		0.1293	0.1118	0.1118	0.1118	0.1118	0.1118	0.1118	0.1118
75 %		0.1118	0.1118	0.1118	0.1118	0.1118	0.1118	0.1118	0.1118
90 %		0.1118	0.1118	0.1118	0.1118	0.1118	0.1118	0.1118	0.1118
None	D2 Stream	0.1884	0.0738	0.0705	0.0705	0.0705	0.0705	0.0705	0.0705
50 %		0.0982	0.0705	0.0705	0.0705	0.0705	0.0705	0.0705	0.0705
75 %		0.0705	0.0705	0.0705	0.0705	0.0705	0.0705	0.0705	0.0705

PECsw (µg/L)	Scenario	STEP 4 Diflufenican							
Nozzle reduction	Vegetated strip (m)	None	None	None	None	None	10m low	10m low	20m high
	No spray buffer (m)	0 m	5 m	10 m	15 m	20 m	10 m	15 m	20 m
90 %		0.0705	0.0705	0.0705	0.0705	0.0705	0.0705	0.0705	0.0705
None	D3 Ditch	0.2197	0.0596	0.0316	0.0215	0.0163	0.0316	0.0215	0.0163
50 %		0.1098	0.0298	0.0158	0.0107	0.0081	0.0158	0.0107	0.0081
75 %		0.0549	0.0149	0.0079	0.0054	0.0041	0.0079	0.0054	0.0041
90 %		0.0220	0.0060	0.0032	0.0021	0.0016	0.0032	0.0021	0.0016
None	D4 Pond	0.0076	0.0065	0.0059	0.0056	0.0054	0.0059	0.0056	0.0054
50 %		0.0056	0.0054	0.0051	0.0049	0.0048	0.0051	0.0049	0.0048
75 %		0.0049	0.0049	0.0047	0.0046	0.0046	0.0047	0.0046	0.0046
90 %		0.0046	0.0045	0.0045	0.0044	0.0044	0.0045	0.0044	0.0044
None	D4 Stream	0.1910	0.0696	0.0368	0.0251	0.0228	0.0368	0.0251	0.0228
50 %		0.0955	0.0348	0.0228	0.0228	0.0228	0.0228	0.0228	0.0228
75 %		0.0477	0.0228	0.0228	0.0228	0.0228	0.0228	0.0228	0.0228
90 %		0.0228	0.0228	0.0228	0.0228	0.0228	0.0228	0.0228	0.0228
None	D5 Pond	0.0077	0.0066	0.0048	0.0038	0.0032	0.0048	0.0038	0.0032
50 %		0.0038	0.0033	0.0024	0.0019	0.0016	0.0024	0.0019	0.0016
75 %		0.0019	0.0017	0.0012	0.0010	0.0008	0.0012	0.0010	0.0008
90 %		0.0008	0.0007	0.0007	0.0007	0.0006	0.0007	0.0007	0.0006
None	D5 Stream	0.2060	0.0750	0.0397	0.0271	0.0206	0.0397	0.0271	0.0206
50 %		0.1030	0.0375	0.0199	0.0135	0.0103	0.0199	0.0135	0.0103
75 %		0.0515	0.0188	0.0099	0.0068	0.0059	0.0099	0.0068	0.0059
90 %		0.0206	0.0075	0.0059	0.0059	0.0059	0.0059	0.0059	0.0059
None	D6 Ditch	0.2224	0.0741	0.0741	0.0741	0.0741	0.0741	0.0741	0.0741
50 %		0.1112	0.0741	0.0741	0.0741	0.0741	0.0741	0.0741	0.0741
75 %		0.0741	0.0741	0.0741	0.0741	0.0741	0.0741	0.0741	0.0741
90 %		0.0741	0.0741	0.0741	0.0741	0.0741	0.0741	0.0741	0.0741
None	R1 Pond	0.0173	0.0169	0.0161	0.0157	0.0154	0.0078	0.0073	0.0042
50 %		0.0157	0.0154	0.0151	0.0148	0.0147	0.0067	0.0065	0.0035
75 %		0.0149	0.0147	0.0146	0.0144	0.0144	0.0062	0.0061	0.0032
90 %		0.0144	0.0143	0.0142	0.0142	0.0142	0.0059	0.0058	0.0030
None	R1 Stream	0.1452	0.0866	0.0866	0.0866	0.0866	0.0388	0.0388	0.0202
50 %		0.0866	0.0866	0.0866	0.0866	0.0866	0.0388	0.0388	0.0202
75 %		0.0866	0.0866	0.0866	0.0866	0.0866	0.0388	0.0388	0.0202
90 %		0.0866	0.0866	0.0866	0.0866	0.0866	0.0388	0.0388	0.0202
None	R3 Stream	0.2037	0.0861	0.0861	0.0861	0.0861	0.0393	0.0388	0.0203
50 %		0.1018	0.0861	0.0861	0.0861	0.0861	0.0388	0.0388	0.0203
75 %		0.0861	0.0861	0.0861	0.0861	0.0861	0.0388	0.0388	0.0203

PECsw (µg/L)	Scenario	STEP 4 Diflufenican							
Nozzle reduction	Vegetated strip (m)	None	None	None	None	None	10m low	10m low	20m high
	No spray buffer (m)	0 m	5 m	10 m	15 m	20 m	10 m	15 m	20 m
90 %		0.0861	0.0861	0.0861	0.0861	0.0861	0.0388	0.0388	0.0203
None	R4 Stream	0.1440	0.1236	0.1236	0.1236	0.1236	0.0558	0.0558	0.0291
50 %		0.1236	0.1236	0.1236	0.1236	0.1236	0.0558	0.0558	0.0291
75 %		0.1236	0.1236	0.1236	0.1236	0.1236	0.0558	0.0558	0.0291
90 %		0.1236	0.1236	0.1236	0.1236	0.1236	0.0558	0.0558	0.0291

Predicted environmental concentrations in sediment (PEC_{SED})

Table 9.2.5- 49: Single application FOCUS Step 4 results for diflufenican, use winter cereals I (pre-emerg) (DGR I / PMT I; GAP name winter cereals I) 70 g/ha

PECsed (µg/kg)	Scenario	STEP 4 Diflufenican							
Nozzle reduction	Vegetated strip (m)	None	None	None	None	None	10m low	10m low	20m high
	No spray buffer (m)	0 m	5 m	10 m	15 m	20 m	10 m	15 m	20 m
None	D1 Ditch	2.0970	1.6690	1.5940	1.5670	1.5540	1.5940	1.5670	1.5540
50 %		1.8030	1.5890	1.5520	1.5380	1.5320	1.5520	1.5380	1.5320
75 %		1.6560	1.5500	1.5310	1.5240	1.5210	1.5310	1.5240	1.5210
90 %		1.5680	1.5260	1.5180	1.5160	1.5140	1.5180	1.5160	1.5140
None	D1 Stream	0.9129	0.8972	0.8930	0.8914	0.8906	0.8930	0.8914	0.8906
50 %		0.9006	0.8927	0.8906	0.8898	0.8894	0.8906	0.8898	0.8894
75 %		0.8944	0.8904	0.8893	0.8890	0.8888	0.8893	0.8890	0.8888
90 %		0.8906	0.8890	0.8886	0.8885	0.8884	0.8886	0.8885	0.8884
None	D2 Ditch	2.4630	2.3870	2.3730	2.3680	2.3660	2.3730	2.3680	2.3660
50 %		2.4110	2.3720	2.3660	2.3630	2.3620	2.3660	2.3630	2.3620
75 %		2.3840	2.3650	2.3620	2.3610	2.3600	2.3620	2.3610	2.3600
90 %		2.3690	2.3610	2.3600	2.3590	2.3590	2.3600	2.3590	2.3590
None	D2 Stream	1.2530	1.2510	1.2510	1.2500	1.2500	1.2510	1.2500	1.2500
50 %		1.2510	1.2510	1.2500	1.2500	1.2500	1.2500	1.2500	1.2500
75 %		1.2510	1.2500	1.2500	1.2500	1.2500	1.2500	1.2500	1.2500
90 %		1.2500	1.2500	1.2500	1.2500	1.2500	1.2500	1.2500	1.2500
None	D3 Ditch	0.2381	0.0652	0.0347	0.0237	0.0181	0.0347	0.0237	0.0181
50 %		0.1196	0.0327	0.0174	0.0119	0.0091	0.0174	0.0119	0.0091
75 %		0.0601	0.0164	0.0087	0.0060	0.0046	0.0087	0.0060	0.0046
90 %		0.0242	0.0066	0.0035	0.0024	0.0018	0.0035	0.0024	0.0018
None	D4 Pond	0.2087	0.1926	0.1619	0.1465	0.1368	0.1619	0.1465	0.1368

PECsed (µg/kg)	Scenario	STEP 4 Diflufenican							
Nozzle reduction	Vegetated strip (m)	None	None	None	None	None	10m low	10m low	20m high
	No spray buffer (m)	0 m	5 m	10 m	15 m	20 m	10 m	15 m	20 m
50 %		0.1469	0.1388	0.1234	0.1157	0.1110	0.1234	0.1157	0.1110
75 %		0.1160	0.1120	0.1046	0.1010	0.0987	0.1046	0.1010	0.0987
90 %		0.0981	0.0966	0.0937	0.0922	0.0913	0.0937	0.0922	0.0913
None	D4 Stream	0.0819	0.0514	0.0487	0.0477	0.0471	0.0487	0.0477	0.0471
50 %		0.0535	0.0485	0.0471	0.0466	0.0463	0.0471	0.0466	0.0463
75 %		0.0496	0.0470	0.0463	0.0460	0.0459	0.0463	0.0460	0.0459
90 %		0.0471	0.0460	0.0457	0.0456	0.0456	0.0457	0.0456	0.0456
None	D5 Pond	0.1425	0.1257	0.0948	0.0799	0.0704	0.0948	0.0799	0.0704
50 %		0.0802	0.0723	0.0573	0.0497	0.0449	0.0573	0.0497	0.0449
75 %		0.0500	0.0460	0.0384	0.0346	0.0322	0.0384	0.0346	0.0322
90 %		0.0316	0.0300	0.0269	0.0254	0.0244	0.0269	0.0254	0.0244
None	D5 Stream	0.1152	0.0424	0.0226	0.0155	0.0119	0.0226	0.0155	0.0119
50 %		0.0578	0.0213	0.0115	0.0079	0.0061	0.0115	0.0079	0.0061
75 %		0.0291	0.0108	0.0058	0.0041	0.0039	0.0058	0.0041	0.0039
90 %		0.0118	0.0045	0.0037	0.0036	0.0035	0.0037	0.0036	0.0035
None	D6 Ditch	1.1800	0.3310	0.1789	0.1234	0.0955	0.1789	0.1234	0.0955
50 %		0.6002	0.1691	0.0919	0.0675	0.0622	0.0919	0.0675	0.0622
75 %		0.3058	0.0869	0.0615	0.0561	0.0534	0.0615	0.0561	0.0534
90 %		0.1260	0.0574	0.0513	0.0491	0.0480	0.0513	0.0491	0.0480
None	R1 Pond	0.5081	0.4938	0.4666	0.4530	0.4444	0.2333	0.2191	0.1317
50 %		0.4533	0.4462	0.4325	0.4257	0.4214	0.1979	0.1908	0.1073
75 %		0.4260	0.4224	0.4156	0.4121	0.4100	0.1802	0.1767	0.0951
90 %		0.4095	0.4080	0.4053	0.4039	0.4031	0.1696	0.1682	0.0878
None	R1 Stream	0.5476	0.5422	0.5407	0.5401	0.5399	0.1345	0.1339	0.0600
50 %		0.5433	0.5406	0.5398	0.5396	0.5394	0.1336	0.1333	0.0596
75 %		0.5412	0.5398	0.5394	0.5393	0.5392	0.1331	0.1330	0.0593
90 %		0.5399	0.5393	0.5392	0.5391	0.5391	0.1329	0.1328	0.0592
None	R3 Stream	0.5781	0.5734	0.5721	0.5716	0.5713	0.1325	0.1320	0.0577
50 %		0.5744	0.5720	0.5713	0.5711	0.5710	0.1317	0.1315	0.0573
75 %		0.5725	0.5713	0.5710	0.5708	0.5708	0.1313	0.1312	0.0571
90 %		0.5713	0.5709	0.5707	0.5707	0.5707	0.1311	0.1311	0.0570
None	R4 Stream	0.4345	0.4313	0.4305	0.4301	0.4300	0.1401	0.1397	0.0686
50 %		0.4320	0.4304	0.4300	0.4298	0.4297	0.1395	0.1394	0.0684
75 %		0.4307	0.4299	0.4297	0.4296	0.4296	0.1393	0.1392	0.0682
90 %		0.4300	0.4297	0.4296	0.4295	0.4295	0.1391	0.1391	0.0681

Table 9.2.5- 50: Single application FOCUS Step 4 results for diflufenican, use winter cereals I (post-emerg) (DGR I / PMT II; GAP name winter cereals I)

PECsed (µg/kg)	Scenario	STEP 4 Diflufenican							
Nozzle reduction	Vegetated strip (m)	None	None	None	None	None	10m low	10m low	20m high
	No spray buffer (m)	0 m	5 m	10 m	15 m	20 m	10 m	15 m	20 m
None	D1 Ditch	2.1610	1.7330	1.6580	1.6310	1.6180	1.6580	1.6310	1.6180
50 %		1.8670	1.6540	1.6160	1.6030	1.5960	1.6160	1.6030	1.5960
75 %		1.7210	1.6140	1.5950	1.5890	1.5850	1.5950	1.5890	1.5850
90 %		1.6330	1.5900	1.5830	1.5800	1.5790	1.5830	1.5800	1.5790
None	D1 Stream	0.9491	0.9334	0.9292	0.9276	0.9268	0.9292	0.9276	0.9268
50 %		0.9367	0.9289	0.9267	0.9260	0.9256	0.9267	0.9260	0.9256
75 %		0.9305	0.9266	0.9255	0.9251	0.9249	0.9255	0.9251	0.9249
90 %		0.9268	0.9252	0.9248	0.9246	0.9246	0.9248	0.9246	0.9246
None	D2 Ditch	2.3910	2.3150	2.3020	2.2970	2.2940	2.3020	2.2970	2.2940
50 %		2.3390	2.3010	2.2940	2.2920	2.2900	2.2940	2.2920	2.2900
75 %		2.3130	2.2940	2.2900	2.2890	2.2890	2.2900	2.2890	2.2890
90 %		2.2970	2.2890	2.2880	2.2880	2.2870	2.2880	2.2880	2.2870
None	D2 Stream	1.2060	1.2050	1.2040	1.2040	1.2040	1.2040	1.2040	1.2040
50 %		1.2050	1.2040	1.2040	1.2040	1.2040	1.2040	1.2040	1.2040
75 %		1.2040	1.2040	1.2040	1.2040	1.2040	1.2040	1.2040	1.2040
90 %		1.2040	1.2040	1.2040	1.2040	1.2040	1.2040	1.2040	1.2040
None	D3 Ditch	0.2227	0.0609	0.0324	0.0221	0.0169	0.0324	0.0221	0.0169
50 %		0.1119	0.0306	0.0163	0.0111	0.0085	0.0163	0.0111	0.0085
75 %		0.0562	0.0154	0.0082	0.0056	0.0043	0.0082	0.0056	0.0043
90 %		0.0226	0.0062	0.0033	0.0022	0.0017	0.0033	0.0022	0.0017
None	D4 Pond	0.2031	0.1870	0.1563	0.1409	0.1312	0.1563	0.1409	0.1312
50 %		0.1414	0.1332	0.1178	0.1101	0.1053	0.1178	0.1101	0.1053
75 %		0.1104	0.1063	0.0989	0.0952	0.0929	0.0989	0.0952	0.0929
90 %		0.0924	0.0909	0.0880	0.0865	0.0856	0.0880	0.0865	0.0856
None	D4 Stream	0.0819	0.0483	0.0455	0.0445	0.0440	0.0455	0.0445	0.0440
50 %		0.0504	0.0454	0.0440	0.0434	0.0432	0.0440	0.0434	0.0432
75 %		0.0465	0.0439	0.0431	0.0429	0.0427	0.0431	0.0429	0.0427
90 %		0.0440	0.0429	0.0426	0.0425	0.0425	0.0426	0.0425	0.0425
None	D5 Pond	0.1408	0.1236	0.0920	0.0770	0.0675	0.0920	0.0770	0.0675
50%		0.0774	0.0695	0.0544	0.0468	0.0420	0.0544	0.0468	0.0420
75 %		0.0470	0.0430	0.0355	0.0316	0.0292	0.0355	0.0316	0.0292
90 %		0.0286	0.0270	0.0240	0.0224	0.0215	0.0240	0.0224	0.0215
None	D5 Stream	0.1152	0.0423	0.0226	0.0155	0.0118	0.0226	0.0155	0.0118
50 %		0.0578	0.0213	0.0114	0.0078	0.0060	0.0114	0.0078	0.0060

PECsed (µg/kg)	Scenario	STEP 4 Diflufenican							
Nozzle reduction	Vegetated strip (m)	None	None	None	None	None	10m low	10m low	20m high
	No spray buffer (m)	0 m	5 m	10 m	15 m	20 m	10 m	15 m	20 m
75 %		0.0290	0.0108	0.0058	0.0040	0.0034	0.0058	0.0040	0.0034
90 %		0.0117	0.0044	0.0033	0.0032	0.0031	0.0033	0.0032	0.0031
None	D6 Ditch	1.1910	0.3340	0.1804	0.1244	0.0962	0.1804	0.1244	0.0962
50 %		0.6057	0.1705	0.0926	0.0676	0.0623	0.0926	0.0676	0.0623
75 %		0.3085	0.0875	0.0616	0.0562	0.0535	0.0616	0.0562	0.0535
90 %		0.1270	0.0574	0.0514	0.0492	0.0481	0.0514	0.0492	0.0481
None	R1 Pond	0.5141	0.4998	0.4725	0.4589	0.4503	0.2358	0.2216	0.1330
50 %		0.4593	0.4521	0.4385	0.4317	0.4274	0.2004	0.1933	0.1086
75 %		0.4319	0.4283	0.4215	0.4181	0.4159	0.1827	0.1791	0.0964
90 %		0.4154	0.4140	0.4113	0.4099	0.4090	0.1720	0.1706	0.0890
None	R1 Stream	0.5583	0.5526	0.5510	0.5504	0.5501	0.1368	0.1363	0.0611
50 %		0.5538	0.5509	0.5501	0.5498	0.5497	0.1359	0.1356	0.0606
75 %		0.5515	0.5501	0.5497	0.5495	0.5494	0.1354	0.1353	0.0603
90 %		0.5501	0.5496	0.5494	0.5493	0.5493	0.1352	0.1351	0.0602
None	R3 Stream	0.5770	0.5722	0.5709	0.5704	0.5702	0.1323	0.1318	0.0576
50 %		0.5732	0.5708	0.5702	0.5699	0.5698	0.1315	0.1312	0.0572
75 %		0.5713	0.5701	0.5698	0.5697	0.5696	0.1311	0.1310	0.0570
90 %		0.5702	0.5697	0.5696	0.5695	0.5695	0.1309	0.1308	0.0569
None	R4 Stream	0.5066	0.5042	0.5035	0.5032	0.5031	0.1531	0.1529	0.0736
50 %		0.5047	0.5034	0.5031	0.5030	0.5029	0.1528	0.1526	0.0734
75 %		0.5037	0.5031	0.5029	0.5029	0.5028	0.1526	0.1525	0.0733
90 %		0.5031	0.5029	0.5028	0.5028	0.5028	0.1524	0.1524	0.0733

Table 9.2.5- 51: Single application FOCUS Step 4 results for diflufenican, use winter cereals II (post-emerg) (DGR II / PMT III; GAP name winter cereals II)

PECsed (µg/kg)	Scenario	STEP 4 Diflufenican							
Nozzle reduction	Vegetated strip (m)	None	None	None	None	None	10m low	10m low	20m high
	No spray buffer (m)	0 m	5 m	10 m	15 m	20 m	10 m	15 m	20 m
None	D1 Ditch	0.9897	0.5052	0.4664	0.4524	0.4452	0.4664	0.4524	0.4452
50 %		0.5745	0.4639	0.4445	0.4375	0.4339	0.4445	0.4375	0.4339
75 %		0.4986	0.4433	0.4336	0.4301	0.4283	0.4336	0.4301	0.4283
90 %		0.4530	0.4309	0.4271	0.4257	0.4250	0.4271	0.4257	0.4250
None	D1 Stream	0.2654	0.2571	0.2549	0.2541	0.2536	0.2549	0.2541	0.2536

PECsed (µg/kg)	**Scenario**	**STEP 4 Diflufenican**							
Nozzle reduction	Vegetated strip (m)	None	None	None	None	None	10m low	10m low	20m high
	No spray buffer (m)	0 m	5 m	10 m	15 m	20 m	10 m	15 m	20 m
50 %		0.2589	0.2547	0.2536	0.2532	0.2530	0.2536	0.2532	0.2530
75 %		0.2556	0.2535	0.2529	0.2527	0.2526	0.2529	0.2527	0.2526
90 %		0.2536	0.2528	0.2526	0.2525	0.2524	0.2526	0.2525	0.2524
None	D2 Ditch	1.0700	1.0190	1.0120	1.0090	1.0080	1.0120	1.0090	1.0080
50 %		1.0310	1.0110	1.0080	1.0070	1.0060	1.0080	1.0070	1.0060
75 %		1.0180	1.0080	1.0060	1.0050	1.0050	1.0060	1.0050	1.0050
90 %		1.0090	1.0050	1.0050	1.0040	1.0040	1.0050	1.0040	1.0040
None	D2 Stream	0.5227	0.5219	0.5217	0.5216	0.5216	0.5217	0.5216	0.5216
50 %		0.5221	0.5217	0.5216	0.5215	0.5215	0.5216	0.5215	0.5215
75 %		0.5218	0.5216	0.5215	0.5215	0.5215	0.5215	0.5215	0.5215
90 %		0.5216	0.5215	0.5215	0.5215	0.5215	0.5215	0.5215	0.5215
None	D3 Ditch	0.1195	0.0327	0.0174	0.0119	0.0090	0.0174	0.0119	0.0090
50 %		0.0600	0.0164	0.0087	0.0060	0.0045	0.0087	0.0060	0.0045
75 %		0.0301	0.0083	0.0044	0.0030	0.0023	0.0044	0.0030	0.0023
90 %		0.0121	0.0033	0.0018	0.0012	0.0009	0.0018	0.0012	0.0009
None	D4 Pond	0.1018	0.0927	0.0779	0.0696	0.0646	0.0779	0.0696	0.0646
50 %		0.0709	0.0655	0.0580	0.0538	0.0513	0.0580	0.0538	0.0513
75 %		0.0541	0.0518	0.0481	0.0461	0.0450	0.0481	0.0461	0.0450
90 %		0.0447	0.0439	0.0425	0.0417	0.0412	0.0425	0.0417	0.0412
None	D4 Stream	0.0411	0.0232	0.0217	0.0212	0.0210	0.0217	0.0212	0.0210
50 %		0.0242	0.0217	0.0209	0.0207	0.0205	0.0209	0.0207	0.0205
75 %		0.0222	0.0209	0.0205	0.0204	0.0203	0.0205	0.0204	0.0203
90 %		0.0210	0.0204	0.0203	0.0202	0.0202	0.0203	0.0202	0.0202
None	D5 Pond	0.0726	0.0629	0.0476	0.0395	0.0346	0.0476	0.0395	0.0346
50 %		0.0399	0.0354	0.0281	0.0240	0.0216	0.0281	0.0240	0.0216
75 %		0.0243	0.0220	0.0183	0.0163	0.0151	0.0183	0.0163	0.0151
90 %		0.0148	0.0139	0.0124	0.0116	0.0111	0.0124	0.0116	0.0111
None	D5 Stream	0.0578	0.0212	0.0113	0.0077	0.0059	0.0113	0.0077	0.0059
50 %		0.0290	0.0107	0.0057	0.0039	0.0030	0.0057	0.0039	0.0030
75 %		0.0146	0.0054	0.0029	0.0020	0.0017	0.0029	0.0020	0.0017
90 %		0.0059	0.0022	0.0017	0.0016	0.0015	0.0017	0.0016	0.0015
None	D6 Ditch	0.5984	0.1677	0.0905	0.0623	0.0477	0.0905	0.0623	0.0477
50 %		0.3041	0.0855	0.0463	0.0321	0.0274	0.0463	0.0321	0.0274
75 %		0.1547	0.0439	0.0272	0.0244	0.0229	0.0272	0.0244	0.0229
90 %		0.0636	0.0250	0.0219	0.0207	0.0201	0.0219	0.0207	0.0201
None	R1 Pond	0.2547	0.2467	0.2335	0.2262	0.2218	0.1172	0.1096	0.0661

PECsed (µg/kg)	Scenario	STEP 4 Diflufenican							
Nozzle reduction	Vegetated strip (m)	None	None	None	None	None	10m low	10m low	20m high
	No spray buffer (m)	0 m	5 m	10 m	15 m	20 m	10 m	15 m	20 m
50 %		0.2266	0.2226	0.2160	0.2123	0.2101	0.0990	0.0952	0.0536
75 %		0.2125	0.2105	0.2072	0.2054	0.2043	0.0899	0.0880	0.0474
90 %		0.2041	0.2033	0.2019	0.2012	0.2008	0.0844	0.0836	0.0437
None	R1 Stream	0.2845	0.2816	0.2809	0.2806	0.2805	0.0682	0.0679	0.0302
50 %		0.2823	0.2808	0.2804	0.2803	0.2802	0.0678	0.0676	0.0299
75 %		0.2811	0.2804	0.2802	0.2802	0.2801	0.0675	0.0675	0.0298
90 %		0.2805	0.2802	0.2801	0.2801	0.2801	0.0674	0.0674	0.0297
None	R3 Stream	0.3144	0.3120	0.3113	0.3111	0.3109	0.0695	0.0693	0.0298
50 %		0.3125	0.3113	0.3109	0.3108	0.3107	0.0691	0.0690	0.0296
75 %		0.3115	0.3109	0.3107	0.3107	0.3106	0.0689	0.0689	0.0295
90 %		0.3109	0.3107	0.3106	0.3106	0.3106	0.0688	0.0688	0.0294
None	R4 Stream	0.2291	0.2274	0.2270	0.2268	0.2267	0.0715	0.0713	0.0347
50 %		0.2278	0.2270	0.2267	0.2266	0.2266	0.0712	0.0712	0.0346
75 %		0.2271	0.2267	0.2266	0.2266	0.2265	0.0711	0.0711	0.0345
90 %		0.2267	0.2266	0.2265	0.2265	0.2265	0.0710	0.0710	0.0345

Table 9.2.5- 52: Single application FOCUS Step 4 results for diflufenican, use winter cereals II (post-emerg) (DGR II / PMT IV; GAP name winter cereals II)

PECsed (µg/kg)	Scenario	STEP 4 Diflufenican							
Nozzle reduction	Vegetated strip (m)	None	None	None	None	None	10m low	10m low	20m high
	No spray buffer (m)	0 m	5 m	10 m	15 m	20 m	10 m	15 m	20 m
None	D1 Ditch	0.9926	0.5307	0.4919	0.4780	0.4708	0.4919	0.4780	0.4708
50 %		0.5999	0.4895	0.4701	0.4631	0.4596	0.4701	0.4631	0.4596
75 %		0.5241	0.4689	0.4592	0.4558	0.4540	0.4592	0.4558	0.4540
90 %		0.4786	0.4566	0.4527	0.4514	0.4507	0.4527	0.4514	0.4507
None	D1 Stream	0.2805	0.2722	0.2699	0.2691	0.2687	0.2699	0.2691	0.2687
50 %		0.2740	0.2698	0.2687	0.2683	0.2681	0.2687	0.2683	0.2681
75 %		0.2707	0.2686	0.2680	0.2678	0.2677	0.2680	0.2678	0.2677
90 %		0.2687	0.2679	0.2676	0.2676	0.2675	0.2676	0.2676	0.2675
None	D2 Ditch	1.0390	0.9809	0.9740	0.9715	0.9702	0.9740	0.9715	0.9702
50 %		0.9934	0.9736	0.9701	0.9688	0.9682	0.9701	0.9688	0.9682
75 %		0.9798	0.9699	0.9681	0.9675	0.9672	0.9681	0.9675	0.9672
90 %		0.9716	0.9676	0.9670	0.9667	0.9666	0.9670	0.9667	0.9666

PECsed (µg/kg)	Scenario	STEP 4 Diflufenican							
Nozzle reduction	Vegetated strip (m)	None	None	None	None	None	10m low	10m low	20m high
	No spray buffer (m)	0 m	5 m	10 m	15 m	20 m	10 m	15 m	20 m
None	D2 Stream	0.4998	0.4989	0.4987	0.4986	0.4986	0.4987	0.4986	0.4986
50 %		0.4991	0.4987	0.4986	0.4986	0.4985	0.4986	0.4986	0.4985
75 %		0.4988	0.4986	0.4985	0.4985	0.4985	0.4985	0.4985	0.4985
90 %		0.4986	0.4985	0.4985	0.4985	0.4985	0.4985	0.4985	0.4985
None	D3 Ditch	0.1118	0.0306	0.0163	0.0111	0.0084	0.0163	0.0111	0.0084
50 %		0.0561	0.0154	0.0082	0.0056	0.0042	0.0082	0.0056	0.0042
75 %		0.0282	0.0077	0.0041	0.0028	0.0021	0.0041	0.0028	0.0021
90 %		0.0113	0.0031	0.0016	0.0011	0.0009	0.0016	0.0011	0.0009
None	D4 Pond	0.0992	0.0902	0.0753	0.0670	0.0621	0.0753	0.0670	0.0621
50 %		0.0674	0.0629	0.0554	0.0513	0.0488	0.0554	0.0513	0.0488
75 %		0.0515	0.0492	0.0455	0.0435	0.0423	0.0455	0.0435	0.0423
90 %		0.0421	0.0412	0.0398	0.0390	0.0386	0.0398	0.0390	0.0386
None	D4 Stream	0.0411	0.0218	0.0203	0.0198	0.0195	0.0203	0.0198	0.0195
50 %		0.0229	0.0202	0.0195	0.0192	0.0191	0.0195	0.0192	0.0191
75 %		0.0208	0.0195	0.0191	0.0190	0.0189	0.0191	0.0190	0.0189
90 %		0.0195	0.0190	0.0188	0.0188	0.0187	0.0188	0.0188	0.0187
None	D5 Pond	0.0718	0.0622	0.0465	0.0382	0.0333	0.0465	0.0382	0.0333
50 %		0.0386	0.0342	0.0268	0.0228	0.0203	0.0268	0.0228	0.0203
75 %		0.0230	0.0207	0.0170	0.0150	0.0138	0.0170	0.0150	0.0138
90 %		0.0135	0.0126	0.0111	0.0103	0.0098	0.0111	0.0103	0.0098
None	D5 Stream	0.0578	0.0212	0.0113	0.0077	0.0059	0.0113	0.0077	0.0059
50 %		0.0290	0.0106	0.0057	0.0039	0.0030	0.0057	0.0039	0.0030
75 %		0.0146	0.0054	0.0029	0.0020	0.0015	0.0029	0.0020	0.0015
90 %		0.0059	0.0022	0.0015	0.0014	0.0013	0.0015	0.0014	0.0013
None	D6 Ditch	0.6039	0.1692	0.0912	0.0628	0.0481	0.0912	0.0628	0.0481
50 %		0.3069	0.0862	0.0467	0.0323	0.0275	0.0467	0.0323	0.0275
75 %		0.1561	0.0442	0.0272	0.0244	0.0230	0.0272	0.0244	0.0230
90 %		0.0641	0.0251	0.0219	0.0208	0.0202	0.0219	0.0208	0.0202
None	R1 Pond	0.2575	0.2495	0.2363	0.2290	0.2246	0.1184	0.1108	0.0667
50 %		0.2294	0.2253	0.2188	0.2151	0.2129	0.1001	0.0963	0.0542
75 %		0.2153	0.2133	0.2100	0.2081	0.2071	0.0910	0.0891	0.0480
90 %		0.2068	0.2060	0.2047	0.2040	0.2035	0.0855	0.0848	0.0442
None	R1 Stream	0.2898	0.2868	0.2860	0.2857	0.2856	0.0694	0.0691	0.0307
50 %		0.2874	0.2859	0.2855	0.2854	0.2853	0.0689	0.0687	0.0304
75 %		0.2863	0.2855	0.2853	0.2852	0.2852	0.0687	0.0686	0.0303
90 %		0.2856	0.2853	0.2852	0.2851	0.2851	0.0685	0.0685	0.0302

PECsed (µg/kg)	Scenario	STEP 4 Diflufenican							
Nozzle reduction	Vegetated strip (m)	None	None	None	None	None	10m low	10m low	20m high
	No spray buffer (m)	0 m	5 m	10 m	15 m	20 m	10 m	15 m	20 m
None	R3 Stream	0.3138	0.3113	0.3107	0.3104	0.3103	0.0694	0.0692	0.0298
50 %		0.3119	0.3106	0.3103	0.3101	0.3101	0.0690	0.0689	0.0295
75 %		0.3109	0.3103	0.3101	0.3100	0.3100	0.0688	0.0687	0.0294
90 %		0.3103	0.3100	0.3100	0.3099	0.3099	0.0687	0.0687	0.0294
None	R4 Stream	0.2666	0.2653	0.2650	0.2649	0.2648	0.0782	0.0780	0.0372
50 %		0.2656	0.2650	0.2648	0.2647	0.2647	0.0780	0.0779	0.0371
75 %		0.2651	0.2648	0.2647	0.2647	0.2646	0.0779	0.0778	0.0371
90 %		0.2648	0.2647	0.2646	0.2646	0.2646	0.0778	0.0778	0.0370

PECsw/sed of ACL+DFF SC 600

The PEC_{sw} for the formulation was calculated according to the following formula:

$$PEC_{sw}\ (\mu g/L) = \frac{\%\ drift\ (90^{th}\ percentile)\ x\ application\ rate\ (g/ha)}{water\ depth\ (30\ cm)\ x\ 10}$$

Application rate & frequency / Crop	1 × 861 g/ha [A] / winter cereals
Scenario / Drift percentile	Arable crops / 90th percentile (for one application)
Entry pathways considered	Drift: yes Volatilisation: no

[A] Based on a product density of 1.230 g/mL and a maximum application rate of 1 x 0.7 L product/ha

PEC_{sw} for the formulation are based the proposed application rate and spray drift values published by Rautmann et al. (2001) for a single application to field crops. Loadings are considered to reach a standard static ditch (width 1 m, depth 30 cm, sediment depth 5 cm, and sediment density 0.8 kg/L).

PEC_{sw} values for the use of ACL+DFF SC 600 in winter cereals assume an application rate of 0.7 L/ha which will also cover use at lower application rates.

Table 9.2.5- 53: PEC_{sw} via spray drift for ACL+DFF SC 600 following applications to winter cereals, 1 × 0.7 L/ha (= 1 × 861 g/ha)

Nozzle reduction	No spray buffer (m) / drift (%)				
	1m / 2.77%	5m / 0.57%	10m / 0.29%	15m / 0.20%	20 m / 0.15%
0 % drift reduction	7.95	1.64	0.83	0.57	0.43
50% drift reduction	3.98	0.82	0.42	0.29	0.22
75% drift reduction	1.99	0.41	0.21	0.14	0.11
90% drift reduction	0.80	0.16	0.08	0.06	0.04

CP 9.3 Fate and behaviour in air

CP 9.3.1 Route and rate of degradation in air and transport via air

Aclonifen

The fate and behaviour in air of aclonifen were evaluated during the original EU review (**EFSA Scientific Report 2008; 149, 1-80**). Aclonifen has a low vapour pressure (1.6×10^{-5} Pa at 20°C) and Henry's law constant (3.24×10^{-2} $Pa \cdot m^3 \cdot mol^{-1}$ at 20°C); therefore volatilisation from soil or water is unlikely to constitute a relevant route for its environmental fate.

Table 9.3.1- 1: Fate and behaviour in air (aclonifen; EFSA Scientific Report 2008; 149, 1-80)

Parameter	**Aclonifen**
Henry's Law Constant [Pa m³/mol]	3.03×10^{-3} $Pa \cdot m^3 \cdot mol^{-1}$ at 20°C
Quantum yield of direct phototransformation Σ > 290nm [mole/Einstein]	5.19×10^{-6}
Vapour pressure (at 20°C) [Pa]	1.6×10^{-5}
Photochemical oxidative degradation in air	DT_{50}: 30.234 hours (Atkinson method)
Metabolites	None

For further information on route and rate of degradation in air and transport via air, please refer to Document MCA, Sections 7.3.1 and 7.3.2.

Diflufenican

The degradation rate in air (Atkinson method) of diflufenican and its anaerobic soil degradation product AE C522392, as well as the volatilization behaviour of diflufenican from soil or plant surfaces was evaluated during the Annex I inclusion, and was accepted by the European Commission (SANCO/3782/08 – rev.1 – 14 March 2008).

Table 9.3.1- 2: Fate and behaviour in air (diflufenican; EFSA Scientific Report 2007; 122, 1-84)

Parameter	**Diflufenican**
Henry's Law Constant [Pa m³/mol]	> 1.18 x 10-2 $Pa \cdot m^3 \cdot mol^{-1}$
Quantum yield of direct phototransformation Σ > 290nm [mole/Einstein]	2.75×10^{-5}
Vapour pressure (at 25°C) [Pa]	4.25×10^{-6}
Photochemical oxidative degradation in air	DT_{50}: 5.0 d (EU), 3.3 d (USA) (Atkinson method)
Volatilisation	From plant surfaces (BBA guideline): Negligible (max. 0.3%) after 24 h From soil (BBA guideline): Negligible (< 0.01%) after 24 h
Metabolites	Metabolite AE C522392 was found to be volatile in an anaerobic soil degradation study (peak of 28.11% AR in volatile traps). However, because its DT_{50} in air is 10.5 h (via Atkinson calculation), it is unlikely to persist in the troposphere or be subject to long range transport.

The vapour pressure at 25 °C of the active substance diflufenican is < 10^{-5} Pa. Hence the active substance diflufenican is regarded as non-volatile. Therefore exposure of adjacent surface waters and terrestrial ecosystems by the active substance diflufenican due to volatilization with subsequent deposition is not expected.

CP 9.4 Estimation of concentrations for other routes of exposure

There are no other routes of exposure if the product is used according to good agricultural practice. Therefore no further estimations are considered necessary.