Bayer CropScience

Document Title

Summary of the fate and behaviour in the environment
Trifloxystrobin WG 50 (500 g/kg)

Data Requirements

EU Regulation 1107/2009 & EU Regulation 284/2013
Document MCP
Section 9: Fate and behaviour in the environment

According to the guidance document, SANCO 10181/2013, for preparing dossiers for the approval of a chemical active substance

Date

2013-12-05

Author(s)

[redacted]

M-471716-01-4

OWNERSHIP STATEMENT

Version history

Date	Data points containing amendments or additions[1] and brief description	Document identifier and version number

[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

		Page
CP 9	FATE AND BEHAVIOUR IN THE ENVIRONMENT	5
CP 9.1	Fate and behaviour in soil	8
CP 9.1.1	Rate of degradation in soil	8
CP 9.1.1.1	Laboratory studies	10
CP 9.1.1.2	Field studies	10
CP 9.1.1.2.1	Soil dissipation studies	10
CP 9.1.1.2.2	Soil accumulation studies	10
CP 9.1.2	Mobility in the soil	10
CP 9.1.2.1	Laboratory studies	10
CP 9.1.2.2	Lysimeter studies	10
CP 9.1.2.3	Field leaching studies	10
CP 9.1.3	Estimation of concentrations in soil	10
CP 9.2	Fate and behaviour in water and sediment	19
CP 9.2.1	Aerobic mineralisation in surface water	20
CP 9.2.2	Water/sediment study	20
CP 9.2.3	Irradiated water/sediment study	20
CP 9.2.4	Estimation of concentrations in groundwater	20
CP 9.2.4.1	Calculation of concentrations in groundwater	21
CP 9.2.4.2	Additional field tests	29
CP 9.2.5	Estimation of concentrations in surface water and sediment	30
CP 9.3	Fate and behaviour in air	43
CP 9.3.1	Route and rate of degradation in air and transport via air	43
CP 9.4	Estimation of concentrations for other routes of exposure	43

CP 9 FATE AND BEHAVIOUR IN THE ENVIRONMENT

Use patterns considered in this risk assessment

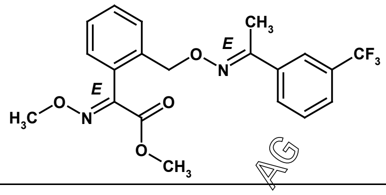
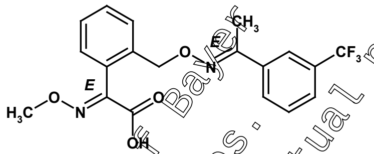
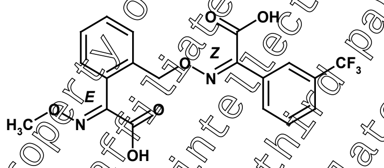
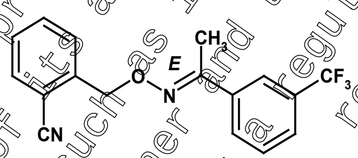
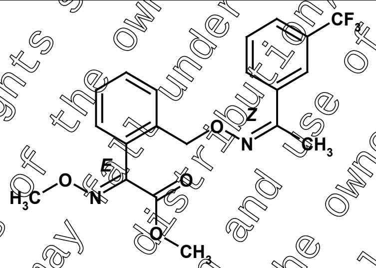
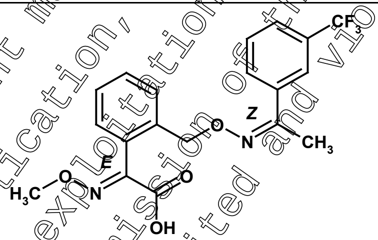
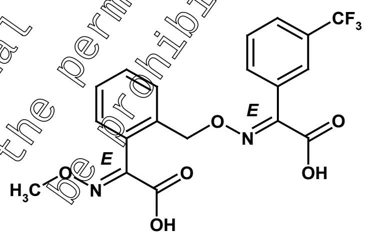
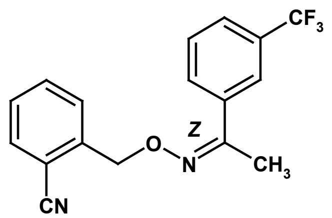
Table 9- 1: Intended application patterns

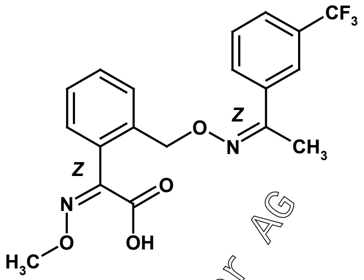
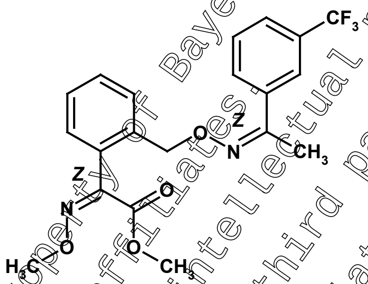
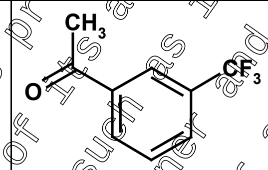
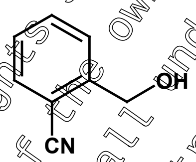
Crop	Timing of application (range)	Number of applications	Application interval [days]	Maximum label rate (range) [kg/ha]	Maximum application rate, individual treatment [g a.s./ha] trifloxystrobin
Apple/Pear/ Quince (early)	BBCH 31 - 89	3	10	0.15	75
Apple/Pear/ Quince (late)	BBCH 55 - 87	3	10	0.225	112.5
Strawberry, late	BBCH 55 - 89	2	7	0.30	150
Strawberry, early	BBCH 10 - 92	2	7	0.25	125
Grapes	BBCH 12 -89	3	10	0.25	125

Compounds addressed in this document

In addition to the active substance trifloxystrobin, the degradation products summarised in Table 9- 2 were addressed in this document as they were major in environmental fate studies.

Table 9- 2: Active substance and degradation products addressed in this document

Compound / Codes	Chemical Structure	Considered for
trifloxystrobin (CGA 279202, *EE*-isomer) a.s.		PEC_{soil} PEC_{gw} PEC_{sw} & PEC_{sed}
CGA 321113 (*EE*-isomer)		PEC_{soil} PEC_{gw} PEC_{sw} & PEC_{sed}
NOA 413161 (*ZE*-isomer)		PEC_{soil} PEC_{gw} PEC_{sw}
CGA 357276 (*E*-isomer)		PEC_{soil} PEC_{gw} PEC_{sw}
CGA 357261 (*ZE*-isomer)		PEC_{soil} PEC_{gw} PEC_{sw}
CGA 373466 (*ZE*-isomer)		PEC_{soil} PEC_{gw} PEC_{sw}
NOA 413163 (*EE*-isomer)		PEC_{soil} PEC_{gw} PEC_{sw}
NOA 409480 (*Z*-isomer)		PEC_{soil} PEC_{gw} PEC_{sw}

Compound / Codes	Chemical Structure	Considered for
CGA 381318 (*ZZ*-isomer)		PEC_{soil} PEC_{gw} PEC_{sw}
CGA 357262 (*ZZ*-isomer)		PEC_{sw}
CGA 107170 (volatile)		PEC_{sw}
2-hydroxymethylbenzonitrile		PEC_{sw}

Definition of the residue for risk assessment

Justification for the residue definition for risk assessment is provided in MCA Section 7, data point 7.4.1.

Table 9- 3: Definition of the residue for risk assessment

Compartment	Residue Definition
Soil	trifloxystrobin, CGA 357261, CGA 321113, CGA 373466, CGA 381318, NOA 413161, NOA 413163, CGA 357276, NOA 409480
Groundwater	same as soil
Surface water	same as soil plus CGA 357262, CGA 107170, 2-hydroxymethylbenzonitrile
Sediment	trifloxystrobin, CGA 321113
Air	trifloxystrobin, CGA 107170

CP 9.1 Fate and behaviour in soil

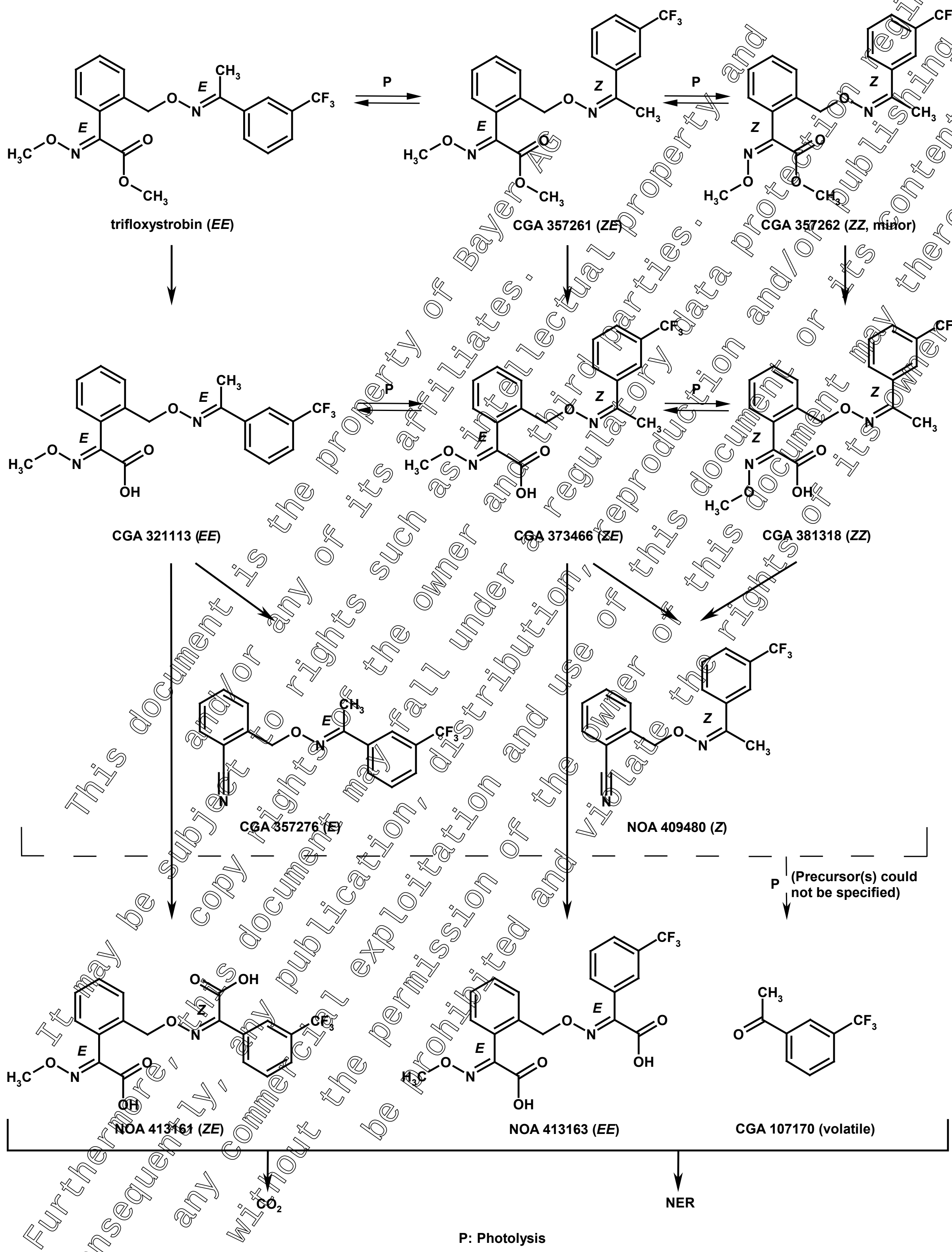
For information on the fate and behaviour in soil please refer to MCA Section 7, data point 7.1.

CP 9.1.1 Rate of degradation in soil

The proposed degradation pathway of trifloxystrobin in soil is shown in Figure 9.1.1-1.

For further information on the fate and behaviour in soil please refer to MCA Section 7, data points 7.1.1 and 7.1.2.

Figure 9.1.1- 1: Proposed degradation pathway of trifloxystrobin in soil (major degradation products)



CP 9.1.1.1 Laboratory studies

For information on laboratory studies please refer to MCA Section 7, data point 7.1.2.1.

CP 9.1.1.2 Field studies

For information on field studies please refer to MCA Section 7, data point 7.1.2.2.

CP 9.1.1.2.1 Soil dissipation studies

For information on field dissipation studies please refer to MCA Section 7, data point 7.1.2.2.1.

CP 9.1.1.2.2 Soil accumulation studies

For information on field accumulation studies please refer to MCA Section 7, data point 7.1.2.2.2.

CP 9.1.2 Mobility in the soil

For information on mobility studies please refer to MCA Section 7, data point 7.1.4.

CP 9.1.2.1 Laboratory studies

For information on laboratory studies please refer to MCA Section 7, data point 7.1.4.1

CP 9.1.2.2 Lysimeter studies

For information on lysimeter studies please refer to MCA Section 7, data point 7.1.4.2.

CP 9.1.2.3 Field leaching studies

For information on field leaching studies please refer to MCA Section 7, data point 7.1.4.3.

CP 9.1.3 Estimation of concentrations in soil

PEC_{soil} modelling approach

The predicted environmental concentrations in soil (PEC_{soil}) for the active substance trifloxystrobin were calculated based on a simple first tier approach (Microsoft® Excel spreadsheet) assuming even distribution of the compound in the upper 0-5 cm soil layer. A standard soil density of 1.5 g/cm^3 was assumed. 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. The interception rates follow the recommendations of the FOCUS groundwater guidance paper (FOCUS 2002) for apples, vines and strawberry (Table 9.2.4- 1).

Derivation of kinetic modelling input values for trifloxystrobin and its major degradation products is presented in MCA Section 7, data point 7.1.2, a summary of modelling input parameters is given in the report KCP 9.1.3/01.

Predicted environmental concentrations in soil (PEC_{soil}) of trifloxystrobin and its major degradation products

For trifloxystrobin, the major degradation products CGA 321113, NOA 413161, CGA 357276, CGA 357261, CGA 373466, NOA 413163, NOA 409480 and CGA 381318 were considered.

Report:	**KCP 9.1.3/01, [redacted], [redacted]; 2013**
Title:	Trifloxystrobin (TFS) and metabolites: PECsoil EUR - Use in pome fruit, grape and strawberry in Europe
Document No.:	M-469543-01-1 (EnSa-13-0743)
Guidelines:	- EU Commission, 2000, Guidance Document on Persistence in Soil (Working Document), 9188/VI/97 rev.8 - FOCUS, 1997, Soil persistence models and EU registration - FOCUS, 2002, Generic Guidance for FOCUS Groundwater Scenarios, Version 1.1
GLP:	No (calculation)

Methods and Materials: The predicted environmental concentrations in soil (PEC_{soil}) of trifloxystrobin and its major soil degradation products CGA 321113, NOA 413161, CGA 357276, CGA 357261, CGA 373466, NOA 413163, NOA 409480 and CGA 381318 were calculated based on a first tier approach using a Microsoft® Excel spreadsheet. The use of trifloxystrobin in pome fruit, grape and strawberry was assessed according to Good Agricultural Practice (GAP) under European cropping conditions. Detailed application data used for simulation of PEC_{soil} were compiled in Table 9.1.3- 1.

Substance Specific Parameters: PEC_{soil} calculations were based on the DT_{50} of 1.43 days (worst case of laboratory studies) for the parent compound trifloxystrobin.

Table 9.1.3- 1: Application pattern used for PEC_{soil} calculations of trifloxystrobin

Individual Crop	FOCUS crop used for Interception	Application				Amount reaching the soil per application [g a.s./ha]
		Rate per Season [g a.s./ha]	Interval [days]	Plant Interception [%]	BBCH Stage	
Apples, early	Apples	3×75	10	3×65	3×31-89	3×26.250
Apples, late	Apples	3×112.5	10	3×65	3×55-87	3×39.375
Grapes	Vines	3×125	10	3×60	3×12-89	3×50.000
Strawberry, early	Strawberry	2×125	7	2×30	2×10-92	2×87.500
Strawberry, late	Strawberry	2×150	7	2×60	2×55-89	2×60.000

Findings: The maximum PEC_{soil} values for trifloxystrobin and its major degradation products are summarised in Table 9.1.3- 2.

Table 9.1.3- 2: Maximum PEC_{soil} of trifloxystrobin and its degradation products for the uses assessed

Use pattern	Trifloxystrobin	CGA 321113	NOA 413161	CGA 357276	CGA 357261	CGA 373466	NOA 413163	NOA 409480	CGA 381318
	PEC_{soil} [mg/kg]								
Apples, early	0.035	0.051	0.006	0.002	0.012	0.029	0.006	0.007	0.005
Apples, late	0.053	0.076	0.009	0.003	0.018	0.043	0.009	0.010	0.007
Vines	0.067	0.097	0.011	0.003	0.023	0.055	0.011	0.013	0.009
Strawberry, early	0.121	0.115	0.013	0.004	0.030	0.068	0.014	0.016	0.013
Strawberry, late	0.083	0.079	0.009	0.003	0.020	0.046	0.010	0.011	0.009

Potential accumulation in soil:
The accumulation potential of the major trifloxystrobin degradation products CGA 321113 and NOA 413161 after long term use was also assessed. The results are presented in Table 9.1.3- 3 (mixing depth of 10 cm for plateau calculation, no-tillage). Table 9.1.3- 4 shows the results taking the effect of tillage into account (mixing depth of 20 cm for plateau calculation).

Table 9.1.3- 3: PEC_{soil} of trifloxystrobin and its major degradation products for the uses assessed, taking the effect of accumulation into account (mixing depth of 10 cm for plateau calculation, no-tillage)

Use Pattern		CGA 321113	NOA 413161
		PEC_{soil} [mg/kg]	
Apples, early	plateau total*	0.025 0.076	<0.001 0.006
Apples, late	plateau total*	0.037 0.113	<0.001 0.009
Vines	plateau total*	0.047 0.144	<0.001 0.011
Strawberry, early	plateau total*	0.056 0.171	<0.001 0.013
Strawberry, late	plateau total*	0.038 0.117	<0.001 0.009
Accumulation factor (mean)		1.490	1.000

* total = plateau (background concentration after multi-year use) + max. PEC_{soil}

Table 9.1.3- 4: PEC$_{soil}$ of trifloxystrobin and its major degradation products for the uses assessed, taking the effect of accumulation into account (mixing depth of 20 cm for plateau calculation)

Use Pattern		CGA 321113	NOA 413161
		PEC$_{soil}$ [mg/kg]	
Apples, early	plateau total*	0.012 0.063	<0.001 0.006
Apples, late	plateau total*	0.019 0.095	<0.001 0.009
Vines	plateau total*	0.024 0.121	<0.001 0.011
Strawberry, early	plateau total*	0.028 0.142	<0.001 0.014
Strawberry, late	plateau total*	0.019 0.098	<0.001 0.009
Accumulation factor (mean)		1.240	1.000

* total = plateau (background concentration after multi-year use) + max. PEC$_{soil}$

The maximum, short-term and long-term PEC$_{soil}$ values and the time weighted average values (TWAC$_{soil}$) of trifloxystrobin and its major degradation products are presented in Table 9.1.3- 5 to Table 9.1.3- 14.

Apples, early, 3×75 g a.s./ha, 3×65% interception, 10 d app. Interval

Table 9.1.3- 5: Apples, early, PEC$_{soil}$ of trifloxystrobin and its major degradation products

Substance		Trifloxystrobin	CGA 321113	NOA 413161	CGA 357276	CGA 357261	CGA 373466	NOA 413163	NOA 409480	CGA 381318
Days after maximum		PEC$_{soil}$ [mg/kg]								
Initial	0	0.035	0.051	0.006	0.002	0.012	0.029	0.006	0.007	0.005
Short term	1	0.022	0.051	0.006	0.002	0.012	0.028	0.006	0.006	0.005
	2	0.013	0.051	0.006	0.002	0.011	0.028	0.006	0.006	0.005
	4	0.005	0.051	0.006	0.002	0.011	0.028	0.006	0.006	0.004
Long term	7	0.001	0.050	0.005	0.002	0.010	0.027	0.006	0.006	0.004
	14	<0.001	0.050	0.005	0.002	0.009	0.025	0.005	0.005	0.003
	21	<0.001	0.049	0.005	0.001	0.008	0.023	0.005	0.005	0.003
	28	<0.001	0.048	0.005	0.001	0.007	0.022	0.004	0.004	0.002
	42	<0.001	0.047	0.004	0.001	0.005	0.019	0.004	0.003	0.001
	50	<0.001	0.046	0.004	0.001	0.005	0.018	0.004	0.003	0.001
	100	<0.001	0.042	0.003	<0.001	0.002	0.011	0.002	0.001	<0.001

Table 9.1.3- 6: Apples, early, $TWAC_{soil}$ of trifloxystrobin and its major degradation products

Substance		Trifloxystrobin	CGA 321113	NOA 413161	CGA 357276	CGA 357261	CGA 373466	NOA 413163	NOA 409480	CGA 381318
Days after maximum		**$TWAC_{soil}$ [mg/kg]**								
Initial	0	---	---	---	---	---	---	---	---	---
Short term	1	0.028	0.051	0.006	0.002	0.012	0.029	0.006	0.007	0.005
	2	0.023	0.051	0.006	0.002	0.012	0.028	0.006	0.006	0.005
	4	0.016	0.051	0.006	0.002	0.011	0.028	0.006	0.006	0.005
Long term	7	0.010	0.051	0.006	0.002	0.011	0.028	0.006	0.006	0.004
	14	0.005	0.050	0.005	0.002	0.010	0.027	0.006	0.006	0.004
	21	0.003	0.050	0.005	0.002	0.010	0.026	0.005	0.006	0.004
	28	0.003	0.050	0.005	0.002	0.009	0.025	0.005	0.005	0.003
	42	0.002	0.049	0.005	0.001	0.008	0.024	0.005	0.005	0.003
	50	0.001	0.049	0.005	0.001	0.008	0.023	0.005	0.005	0.002
	100	< 0.001	0.046	0.004	0.001	0.005	0.018	0.004	0.003	0.001

Apples, late, 3×112.5 g a.s./ha, 3×65% interception, 10 d app. interval

Table 9.1.3- 7: Apples, late, PEC_{soil} of trifloxystrobin and its major degradation products

Substance		Trifloxystrobin	CGA 321113	NOA 413161	CGA 357276	CGA 357261	CGA 373466	NOA 413163	NOA 409480	CGA 381318
Days after maximum		**PEC_{soil} [mg/kg]**								
Initial	0	0.053	0.076	0.009	0.003	0.018	0.043	0.009	0.010	0.007
Short term	1	0.033	0.076	0.009	0.003	0.017	0.043	0.009	0.010	0.007
	2	0.020	0.076	0.009	0.003	0.017	0.042	0.009	0.010	0.007
	4	0.008	0.076	0.008	0.003	0.017	0.041	0.009	0.009	0.006
Long term	7	0.002	0.075	0.008	0.002	0.016	0.040	0.008	0.009	0.006
	14	<0.001	0.074	0.008	0.002	0.014	0.038	0.008	0.008	0.005
	21	<0.001	0.073	0.007	0.002	0.012	0.035	0.007	0.007	0.004
	28	<0.001	0.072	0.007	0.002	0.011	0.033	0.007	0.006	0.003
	42	<0.001	0.070	0.006	0.002	0.008	0.029	0.006	0.005	0.002
	50	<0.001	0.069	0.006	0.002	0.007	0.027	0.005	0.005	0.002
	100	<0.001	0.063	0.004	0.001	0.003	0.016	0.003	0.002	<0.001

Table 9.1.3- 8: Apples, late, $TWAC_{soil}$ of trifloxystrobin and its major degradation products

Substance		Trifloxystrobin	CGA 321113	NOA 413161	CGA 357276	CGA 357261	CGA 373466	NOA 413163	NOA 409480	CGA 381318
Days after maximum		$TWAC_{soil}$ [mg/kg]								
Initial	0	---	---	---	---	---	---	---	---	---
Short term	1	0.042	0.076	0.009	0.003	0.018	0.043	0.009	0.010	0.007
	2	0.034	0.076	0.009	0.003	0.017	0.043	0.009	0.010	0.007
	4	0.023	0.076	0.009	0.003	0.017	0.042	0.009	0.010	0.007
Long term	7	0.015	0.076	0.008	0.003	0.017	0.042	0.009	0.009	0.006
	14	0.008	0.075	0.008	0.002	0.016	0.040	0.008	0.009	0.006
	21	0.005	0.075	0.008	0.002	0.015	0.039	0.008	0.008	0.005
	28	0.004	0.074	0.008	0.002	0.014	0.038	0.008	0.008	0.005
	42	0.003	0.073	0.007	0.002	0.012	0.035	0.007	0.007	0.004
	50	0.002	0.073	0.007	0.002	0.012	0.034	0.007	0.007	0.004
	100	0.001	0.069	0.006	0.002	0.008	0.028	0.006	0.005	0.002

Vines, 3×125 g a.s./ha, 3×60% interception, 10 d app. interval

Table 9.1.3- 9: Vines, PEC_{soil} of trifloxystrobin and its major degradation products

Substance		Trifloxystrobin	CGA 321113	NOA 413161	CGA 357276	CGA 357261	CGA 373466	NOA 413163	NOA 409480	CGA 381318
Days after maximum		PEC_{soil} [mg/kg]								
Initial	0	0.067	0.097	0.011	0.003	0.023	0.055	0.011	0.013	0.009
Short term	1	0.041	0.097	0.011	0.003	0.022	0.054	0.011	0.012	0.009
	2	0.025	0.097	0.011	0.003	0.022	0.054	0.011	0.012	0.009
	4	0.010	0.096	0.011	0.003	0.021	0.053	0.011	0.012	0.008
Long term	7	0.002	0.096	0.010	0.003	0.020	0.051	0.011	0.011	0.007
	14	<0.001	0.094	0.010	0.003	0.017	0.048	0.010	0.010	0.006
	21	<0.001	0.093	0.009	0.003	0.015	0.045	0.009	0.009	0.005
	28	<0.001	0.092	0.009	0.003	0.013	0.042	0.009	0.008	0.004
	42	<0.001	0.089	0.008	0.002	0.010	0.036	0.007	0.007	0.003
	50	<0.001	0.088	0.007	0.002	0.009	0.034	0.007	0.006	0.002
	100	<0.001	0.080	0.005	0.001	0.003	0.021	0.004	0.003	<0.001

Table 9.1.3- 10: Vines, TWAC$_{soil}$ of trifloxystrobin and its major degradation products

Substance		Trifloxystrobin	CGA 321113	NOA 413161	CGA 357276	CGA 357261	CGA 373466	NOA 413163	NOA 409480	CGA 381318
Days after maximum		TWAC$_{soil}$ [mg/kg]								
Initial	0	---	---	---	---	---	---	---	---	---
Short term	1	0.053	0.097	0.011	0.003	0.022	0.054	0.011	0.012	0.009
	2	0.043	0.097	0.011	0.003	0.022	0.054	0.011	0.012	0.009
	4	0.030	0.097	0.011	0.003	0.022	0.054	0.011	0.012	0.009
Long term	7	0.019	0.096	0.011	0.003	0.021	0.053	0.011	0.012	0.008
	14	0.010	0.096	0.010	0.003	0.020	0.051	0.011	0.011	0.007
	21	0.007	0.095	0.010	0.003	0.019	0.049	0.010	0.011	0.007
	28	0.005	0.094	0.010	0.003	0.018	0.048	0.010	0.010	0.006
	42	0.003	0.093	0.009	0.003	0.016	0.045	0.009	0.009	0.005
	50	0.003	0.092	0.009	0.003	0.015	0.043	0.009	0.009	0.005
	100	0.001	0.088	0.008	0.002	0.010	0.035	0.007	0.006	0.003

Strawberry, early, 2×125 g a.s./ha, 2×30% interception, 7 d app. interval

Table 9.1.3- 11: Strawberry, early, PEC$_{soil}$ of trifloxystrobin and its major degradation products

Substance		Trifloxystrobin	CGA 321113	NOA 413161	CGA 357276	CGA 357261	CGA 373466	NOA 413163	NOA 409480	CGA 381318
Days after maximum		PEC$_{soil}$ [mg/kg]								
Initial	0	0.121	0.115	0.013	0.004	0.030	0.068	0.014	0.016	0.013
Short term	1	0.074	0.114	0.013	0.004	0.029	0.067	0.014	0.016	0.012
	2	0.046	0.114	0.013	0.004	0.028	0.066	0.014	0.016	0.012
	4	0.017	0.114	0.013	0.004	0.027	0.065	0.013	0.015	0.011
Long term	7	0.004	0.113	0.013	0.004	0.026	0.063	0.013	0.014	0.010
	14	<0.001	0.112	0.012	0.004	0.023	0.059	0.012	0.013	0.008
	21	<0.001	0.110	0.011	0.003	0.020	0.055	0.011	0.012	0.007
	28	<0.001	0.109	0.011	0.003	0.017	0.052	0.011	0.010	0.005
	42	<0.001	0.106	0.010	0.003	0.013	0.045	0.009	0.008	0.004
	50	<0.001	0.104	0.009	0.003	0.012	0.042	0.008	0.007	0.003
	100	<0.001	0.094	0.006	0.002	0.005	0.026	0.005	0.003	<0.001

Table 9.1.3- 12: Strawberry, early, $TWAC_{soil}$ of trifloxystrobin and its major degradation products

Substance		Trifloxystrobin	CGA 321113	NOA 413161	CGA 357276	CGA 357261	CGA 373466	NOA 413163	NOA 409480	CGA 381318
Days after maximum		$TWAC_{soil}$ [mg/kg]								
Initial	0	---	---	---	---	---	---	---	---	---
Short term	1	0.096	0.114	0.013	0.004	0.029	0.067	0.014	0.016	0.012
	2	0.077	0.114	0.013	0.004	0.029	0.067	0.014	0.016	0.012
	4	0.053	0.114	0.013	0.004	0.028	0.066	0.014	0.016	0.012
Long term	7	0.034	0.114	0.013	0.004	0.028	0.065	0.014	0.015	0.011
	14	0.018	0.113	0.013	0.004	0.026	0.063	0.013	0.014	0.010
	21	0.012	0.112	0.012	0.004	0.024	0.061	0.013	0.014	0.009
	28	0.009	0.112	0.012	0.004	0.023	0.059	0.012	0.013	0.009
	42	0.006	0.110	0.011	0.003	0.020	0.056	0.011	0.012	0.007
	50	0.005	0.109	0.011	0.003	0.019	0.054	0.011	0.011	0.006
	100	0.002	0.104	0.009	0.003	0.013	0.043	0.009	0.008	0.004

Strawberry, late, 2×150 g a.s./ha, 2×60% interception, 7 d app. interval

Table 9.1.3- 13: Strawberry, late, PEC_{soil} of trifloxystrobin and its major degradation products

Substance		Trifloxystrobin	CGA 321113	NOA 413161	CGA 357276	CGA 357261	CGA 373466	NOA 413163	NOA 409480	CGA 381318
Days after maximum		PEC_{soil} [mg/kg]								
Initial	0	0.083	0.079	0.009	0.003	0.020	0.046	0.010	0.011	0.009
Short term	1	0.051	0.078	0.009	0.003	0.020	0.046	0.010	0.011	0.008
	2	0.031	0.078	0.009	0.003	0.020	0.045	0.009	0.011	0.008
	4	0.012	0.078	0.009	0.003	0.019	0.045	0.009	0.010	0.008
Long term	7	0.003	0.078	0.009	0.003	0.018	0.043	0.009	0.010	0.007
	14	<0.001	0.076	0.008	0.002	0.016	0.041	0.008	0.009	0.006
	21	<0.001	0.075	0.008	0.002	0.014	0.038	0.008	0.008	0.005
	28	<0.001	0.074	0.007	0.002	0.012	0.035	0.007	0.007	0.004
	42	<0.001	0.072	0.007	0.002	0.009	0.031	0.006	0.006	0.002
	50	<0.001	0.071	0.006	0.002	0.008	0.029	0.006	0.005	0.002
	100	<0.001	0.065	0.004	0.001	0.003	0.018	0.004	0.002	<0.001

Table 9.1.3- 14: Strawberry, late, $TWAC_{soil}$ of trifloxystrobin and its major degradation products

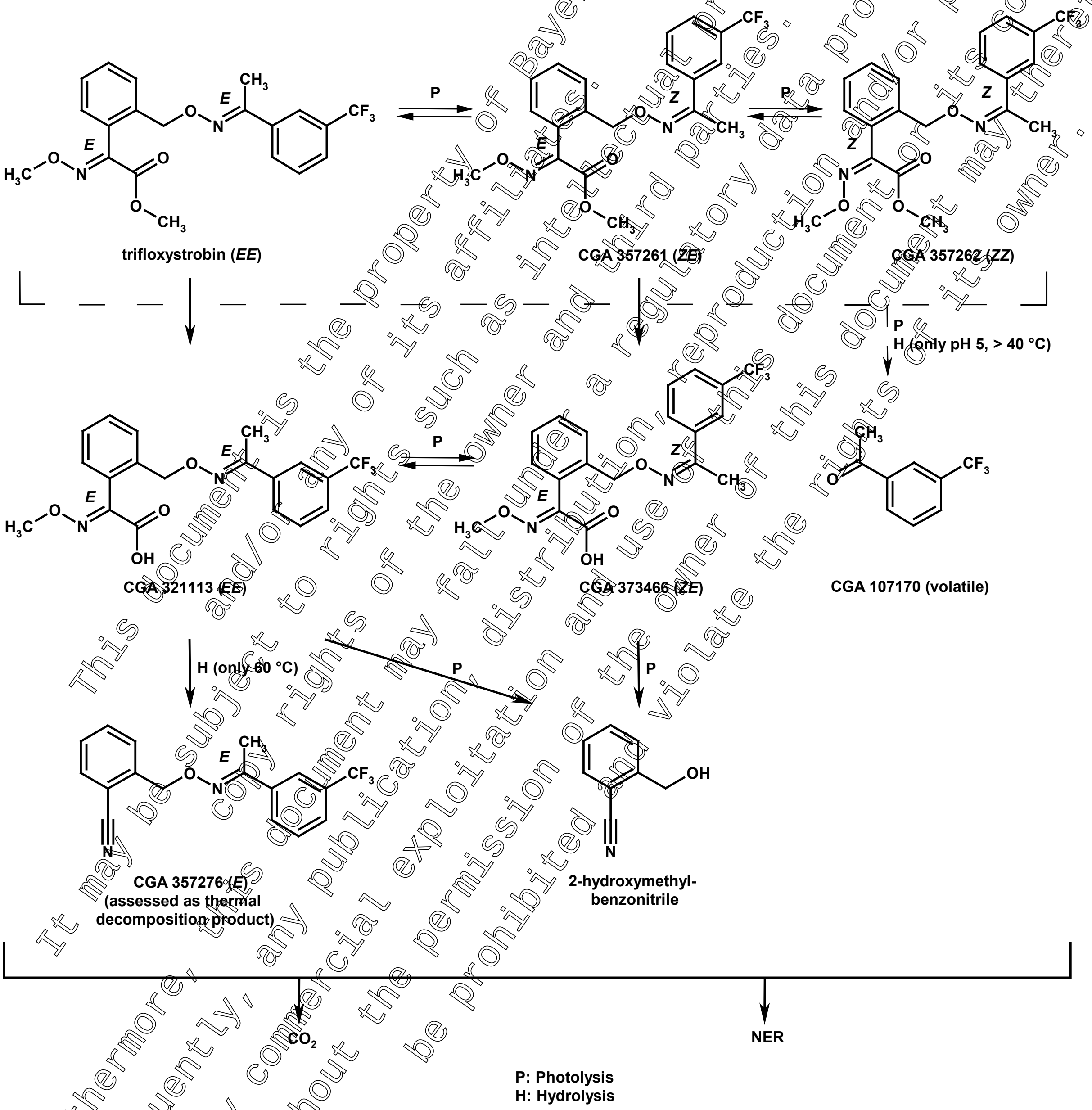
Substance		Trifloxystrobin	CGA 321113	NOA 413161	CGA 357276	CGA 357261	CGA 373466	NOA 413163	NOA 409480	CGA 381318
Days after maximum		$TWAC_{soil}$ [mg/kg]								
Initial	0	---	---	---	---	---	---	---	---	---
Short term	1	0.066	0.079	0.009	0.003	0.020	0.046	0.010	0.011	0.009
	2	0.053	0.078	0.009	0.003	0.020	0.046	0.010	0.011	0.008
	4	0.037	0.078	0.009	0.003	0.020	0.045	0.009	0.011	0.008
Long term	7	0.024	0.078	0.009	0.003	0.019	0.045	0.009	0.010	0.008
	14	0.012	0.078	0.009	0.003	0.018	0.043	0.009	0.010	0.007
	21	0.008	0.077	0.009	0.003	0.017	0.042	0.009	0.009	0.006
	28	0.006	0.076	0.008	0.002	0.016	0.041	0.008	0.009	0.006
	42	0.004	0.075	0.008	0.002	0.014	0.038	0.008	0.008	0.005
	50	0.003	0.075	0.008	0.002	0.013	0.037	0.008	0.008	0.004
	100	0.002	0.071	0.006	0.002	0.009	0.030	0.006	0.006	0.003

CP 9.2 Fate and behaviour in water and sediment

The proposed degradation pathway of trifloxystrobin in water and sediment is shown in Figure 9.2- 1.

For information on the fate and behaviour in water and sediment please refer to MCA Section 7, data point 7.2.

Figure 9.2- 1: Proposed degradation pathway of trifloxystrobin in water and sediment (major degradation products)



CP 9.2.1 Aerobic mineralisation in surface water

For information on aerobic mineralisation in surface water studies please refer to MCA Section 7, data point 7.2.2.2.

CP 9.2.2 Water/sediment study

For information on water/sediment studies please refer to MCA Section 7, data point 7.2.2.3.

CP 9.2.3 Irradiated water/sediment study

For information on irradiated water/sediment studies please refer to MCA Section 7, data point 7.2.2.4.

CP 9.2.4 Estimation of concentrations in groundwater

PEC_{gw} modelling approach

The predicted environmental concentrations in groundwater (PEC_{gw}) for the active substance trifloxystrobin were calculated using the simulation models PEARL and PELMO following the recommendations of the FOCUS working group on groundwater scenarios.
The leaching calculations were run over 26 years, as proposed for pesticides which may be applied every year. The simulation length increases to 46 and 66 years for pesticides which are applied only every second and third year, respectively. The first six years are a ‘warm up’ period; only the last 20 years were considered for the assessment of the leaching potential. The 80th percentile of the average annual groundwater concentrations in the percolate at 1 m depth under a treated plantation 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. The interception rates follow the FOCUS recommendations (Table 9.2.4- 1).

Table 9.2.4- 1: FOCUS groundwater crop interception values

<table>
<tr><th>Crop</th><th colspan="5">Crop stage
Interception [%]</th></tr>
<tr><td>Apples</td><td>without leaves
50</td><td>flowering
65</td><td colspan="2">foliage development
70</td><td>full foliage
80</td></tr>
<tr><td>Vines</td><td>without leaves
40</td><td>first leaves
50</td><td>leaf development
60</td><td>flowering
70</td><td>ripening
85</td></tr>
<tr><td>Strawberry</td><td>Bare – emergence
BBCH 00 - 09
0</td><td>Leaf development
BBCH 10 - 19
30</td><td>Stem elongation
BBCH 20 - 39
50</td><td>Flowering
BBCH 40 - 89
60</td><td>Senescence Ripening
BBCH 90 - 99
60</td></tr>
</table>

Derivation of kinetic modelling input values is presented in MCA Section 7, data point 7.1.2, a summary of modelling input parameters is given in the report KCP 9.2.4.1/01.

CP 9.2.4.1 Calculation of concentrations in groundwater

Predicted environmental concentrations in groundwater (PEC_{gw}) of trifloxystrobin and its major degradation products

For trifloxystrobin, the major degradation products CGA 321113, NOA 413161, CGA 357276, CGA 357261, CGA 373466, NOA 413163, NOA 409480 and CGA 381318 were considered.

Report:	**KCP 9.2.4.1/01, [redacted], [redacted]; 2013**
Title:	Trifloxystrobin (TFS) and metabolites: PECgw FOCUS PEARL, PELMO EUR - Use in pome fruit, grape and strawberry in Europe
Document No:	M-469500-01-1 (EnSa-13-0741)
Guidelines:	- FOCUS 2000, SANCO/321/2000 v. 2.0 - FOCUS 2009, SANCO/13144/2010 v. 1 - FOCUS 2012, Generic Guidance for FOCUS Groundwater Assessments, v. 2.1
GLP:	No (calculation)

Methods and Materials: Predicted environmental concentrations of the active substance trifloxystrobin and its major soil degradation products in groundwater recharge (PEC_{gw}) were calculated for the use in Europe, using the simulation models FOCUS PEARL 4.4.4 (Leistra et al. 2001) and FOCUS PELMO 5.5.3 (Jene 1998; Klein 1995, 1999, 2011). PEC_{gw} were evaluated as the 80th percentile of the mean annual leachate concentration at 1 m soil depth. Model parameters and scenarios consisting of weather, soil, and crop data were used as proposed by FOCUS (2009).

The use of trifloxystrobin in pome fruit, grape and strawberry was assessed according to Good Agricultural Practice (GAP) under European cropping conditions. Detailed application data used for simulation of PEC_{gw} were compiled in Table 9.2.4.1-1.

Table 9.2.4.1- 1: Application pattern used for PEC_{gw} calculations of trifloxystrobin

Individual Crop	FOCUS crop used for Interception	Application				Amount reaching the soil per application [g a.s./ha]
		Rate per Season [g a.s./ha]	Interval [days]	Plant Interception [%]	BBCH Stage	
Apples, late	Apples	3×112.5	10	3×65	3×55-87	3×39.375
Apples, early	Apples	3×75	10	3×65	3×31-89	3×26.250
Grapes, late	Vines	3×125	10	3×60	3×12-89	3×50.000
Grapes, early	Vines	3×125	10	60; 70; 70	3×12-89	50.0; 37.5; 37.5
Strawberry, late	Strawberry	2×150	7	2×60	2×55-89	2×60.000
Strawberry, early	Strawberry	2×125	7	2×30	2×10-92	2×87.500

Application dates for the simulation runs were defined following the crop event dates of the respective crop and scenario (Table 9.2.4.1- 2) as given by FOCUS (2009). Crop interception was taken into account according to the BBCH growth stage, as recommended by FOCUS (2012).

Table 9.2.4.1- 2: First application dates and related information for trifloxystrobin as used for the simulation runs; offset is relevant only for relative application dates, two sets of data are provided for crops with two seasons

Individual crop	Apples, late	Apples, early	Vines, late	Vines, early	Strawberry, late	Strawberry, early
Repeat Interval for App. Events	Every Year	Every Year	Every Year	Every Year	Every Year	Every Year
Application Technique	Spray	Spray	Spray	Spray	Spray	Spray
Absolute / Relative to	Absolute	Absolute	Absolute	Absolute	Absolute	Absolute
Scenario	1st App. Date (Julian day) Offset	1st App. Date (Julian day) Offset	1st App. Date (Julian day) Offset	1st App. Date (Julian day) Offset	1st App. Date (Julian day) Offset	1st App. Date (Julian day) Offset
[redacted]	29 Apr (119) -	07 Apr (97) -	06 Jun (157) -	05 Apr (95) -	- - -	- - -
[redacted]	17 May (137) -	22 Apr (112) -	15 Jun (166) -	19 Apr (109) -	25 Apr (115) -	16 Mar (75) -
[redacted]	03 Jun (154) -	15 May (135) -	- - -	- - -	13 Jun (164) -	15 May (135) -
[redacted]	16 May (136) -	21 Apr (111) -	25 Jun (176) -	04 May (124) -	24 Apr (114) -	15 Mar (74) -
[redacted]	21 Apr (111) -	31 Mar (90) -	- - -	- - -	- - -	- - -
[redacted]	04 May (124) -	08 Apr (98) -	04 Jun (155) -	05 Apr (95) -	- - -	- - -
[redacted]	20 Apr (110) -	23 Mar (82) -	14 May (134) -	18 Mar (77) -	- - -	- - -
[redacted]	17 Apr (107) -	22 Mar (81) -	12 Jun (163) -	04 Apr (94) -	02 Feb (33) -	01 Dec (335) -
[redacted]	18 Apr (108) -	22 Mar (81) -	20 May (140) -	19 Mar (78) -	- - -	- - -

Findings: PEC_{gw} were evaluated as the 80th percentile of the mean annual leachate concentration at 1 m soil depth. PEC_{gw} values for trifloxystrobin and its metabolites are given in the following tables.

Overview of the maximum PEC_{gw} values for all uses obtained with FOCUS PEARL is given in Table 9.2.4.1- 3.

Table 9.2.4.1- 3: Maximum FOCUS PEARL PEC_{gw} results of trifloxystrobin and its major degradation products in µg/L for the uses assessed

Crop	Trifloxystrobin	CGA 321113	NOA 413161	CGA 357276	CGA 357261	CGA 373466	NOA 413163	NOA 409480	CGA 381318
Apples, late	<0.001	1.154	4.299	0.003	<0.001	0.004	7.403	<0.001	<0.001
Apples, early	<0.001	0.698	2.709	0.002	<0.001	0.001	4.416	<0.001	<0.001
Vines, late	<0.001	0.699	1.884	0.002	<0.001	0.005	3.355	<0.001	<0.001
Vines, early	<0.001	0.700	2.013	0.002	<0.001	0.002	3.480	<0.001	<0.001
Strawberry, late	<0.001	0.582	2.487	0.001	<0.001	0.001	4.122	<0.001	<0.001
Strawberry, early	<0.001	0.820	3.507	0.002	<0.001	0.003	5.905	<0.001	<0.001

Overview of the maximum PEC_{gw} values for all uses obtained with FOCUS PELMO is given in Table 9.2.4.1- 4.

Table 9.2.4.1- 4: Maximum FOCUS PELMO PEC_{gw} results of trifloxystrobin and its major degradation products in µg/L for the uses assessed

Crop	Trifloxystrobin	CGA 321113	NOA 413161	CGA 357276	CGA 357261	CGA 373466	NOA 413163	NOA 409480	CGA 381318
Apples, late	<0.001	0.811	3.074	0.003	<0.001	0.007	5.195	<0.001	<0.001
Apples, early	<0.001	0.540	1.963	0.002	<0.001	0.005	3.125	<0.001	<0.001
Vines, late	<0.001	0.763	2.055	0.003	<0.001	0.006	3.674	<0.001	<0.001
Vines, early	<0.001	0.765	2.252	0.003	<0.001	0.008	3.782	<0.001	<0.001
Strawberry, late	<0.001	0.597	1.958	0.002	<0.001	0.002	3.301	<0.001	<0.001
Strawberry, early	<0.001	0.815	2.825	0.003	<0.001	0.003	4.625	<0.001	<0.001

Apples, late, 3×112.5 g a.s./ha

Table 9.2.4.1- 5: FOCUS PEARL PEC$_{gw}$ results of trifloxystrobin and its major degradation products in µg/L (Apples, 3×112.5 g a.s./ha, 3×65% interception, 10 days app. interval)

Scenario	Trifloxystrobin	CGA 321113	NOA 413161	CGA 357276	CGA 357261	CGA 373466	NOA 413163	NOA 409480	CGA 381318
[redacted]	<0.001	0.635	1.930	<0.001	<0.001	<0.001	3.332	<0.001	<0.001
[redacted]	<0.001	1.154	4.299	0.003	<0.001	0.004	7.403	<0.001	<0.001
[redacted]	<0.001	0.496	3.958	<0.001	<0.001	<0.001	6.467	<0.001	<0.001
[redacted]	<0.001	0.628	1.427	<0.001	<0.001	0.002	2.441	<0.001	<0.001
[redacted]	<0.001	0.591	1.278	<0.001	<0.001	0.002	2.078	<0.001	<0.001
[redacted]	<0.001	0.489	1.181	0.001	<0.001	0.001	1.801	<0.001	<0.001
[redacted]	<0.001	0.245	0.735	<0.001	<0.001	<0.001	1.099	<0.001	<0.001
[redacted]	<0.001	0.589	1.893	<0.001	<0.001	0.001	3.153	<0.001	<0.001
[redacted]	<0.001	0.561	1.663	<0.001	<0.001	<0.001	2.532	<0.001	<0.001

Table 9.2.4.1- 6: FOCUS PELMO PEC$_{gw}$ results of trifloxystrobin and its major degradation products in µg/L (Apples, 3×112.5 g a.s./ha, 3×65% interception, 10 days app. interval)

Scenario	Trifloxystrobin	CGA 321113	NOA 413161	CGA 357276	CGA 357261	CGA 373466	NOA 413163	NOA 409480	CGA 381318
[redacted]	<0.001	0.679	1.625	<0.001	<0.001	0.001	2.905	<0.001	<0.001
[redacted]	<0.001	0.811	2.292	0.003	<0.001	0.005	3.970	<0.001	<0.001
[redacted]	<0.001	0.431	3.074	<0.001	<0.001	<0.001	5.195	<0.001	<0.001
[redacted]	<0.001	0.652	1.569	<0.001	<0.001	0.002	2.730	<0.001	<0.001
[redacted]	<0.001	0.779	1.344	<0.001	<0.001	0.004	2.334	<0.001	<0.001
[redacted]	<0.001	0.657	1.029	0.002	<0.001	0.007	1.923	<0.001	<0.001
[redacted]	<0.001	0.373	0.670	<0.001	<0.001	0.001	1.050	<0.001	<0.001
[redacted]	<0.001	0.342	1.430	<0.001	<0.001	<0.001	2.233	<0.001	<0.001
[redacted]	<0.001	0.371	1.177	<0.001	<0.001	<0.001	1.893	<0.001	<0.001

Apples, early, 3×75 g a.s./ha

Table 9.2.4.1- 7: FOCUS PEARL PEC_{gw} results of trifloxystrobin and its major degradation products in µg/L (Apples, 3×75 g a.s./ha, 3×65% interception, 10 days app. interval)

Scenario	Trifloxystrobin	CGA 321113	NOA 413161	CGA 357276	CGA 357261	CGA 373466	NOA 413163	NOA 409480	CGA 381318
[redacted]	<0.001	0.447	1.320	<0.001	<0.001	<0.001	2.278	<0.001	<0.001
	<0.001	0.698	2.709	0.002	<0.001	0.001	4.416	<0.001	<0.001
	<0.001	0.308	2.499	<0.001	<0.001	<0.001	3.869	<0.001	<0.001
	<0.001	0.395	0.949	<0.001	<0.001	<0.001	1.594	<0.001	<0.001
	<0.001	0.393	0.839	<0.001	<0.001	<0.001	1.364	<0.001	<0.001
	<0.001	0.315	0.754	<0.001	<0.001	<0.001	1.162	<0.001	<0.001
	<0.001	0.169	0.479	<0.001	<0.001	<0.001	0.706	<0.001	<0.001
	<0.001	0.406	1.259	<0.001	<0.001	<0.001	2.047	<0.001	<0.001
	<0.001	0.348	1.075	<0.001	<0.001	<0.001	1.586	<0.001	<0.001

Table 9.2.4.1- 8: FOCUS PELMO PEC_{gw} results of trifloxystrobin and its major degradation products in µg/L (Apples, 3×75 g a.s./ha, 3×65% interception, 10 days app. interval)

Scenario	Trifloxystrobin	CGA 321113	NOA 413161	CGA 357276	CGA 357261	CGA 373466	NOA 413163	NOA 409480	CGA 381318
[redacted]	<0.001	0.491	1.097	<0.001	<0.001	0.001	1.978	<0.001	<0.001
	<0.001	0.464	1.440	0.002	<0.001	0.002	2.400	<0.001	<0.001
	<0.001	0.272	1.963	<0.001	<0.001	<0.001	3.125	<0.001	<0.001
	<0.001	0.448	1.028	<0.001	<0.001	0.001	1.779	<0.001	<0.001
	<0.001	0.540	0.876	<0.001	<0.001	0.002	1.545	<0.001	<0.001
	<0.001	0.454	0.699	0.001	<0.001	0.005	1.358	<0.001	<0.001
	<0.001	0.262	0.466	<0.001	<0.001	0.001	0.799	<0.001	<0.001
	<0.001	0.267	0.984	<0.001	<0.001	<0.001	1.499	<0.001	<0.001
	<0.001	0.264	0.793	<0.001	<0.001	<0.001	1.241	<0.001	<0.001

Vines, late, 3×125 g a.s./ha

Table 9.2.4.1- 9: FOCUS PEARL PEC_{gw} results of trifloxystrobin and its major degradation products in µg/L (Vines, late, 3×125 g a.s./ha, 60/70/70% interception, 10 days app. interval)

Scenario	Trifloxystrobin	CGA 321113	NOA 413161	CGA 357276	CGA 357261	CGA 373466	NOA 413163	NOA 409480	CGA 381318
[redacted]	<0.001	0.521	1.497	<0.001	<0.001	<0.001	2.527	<0.001	<0.001
	<0.001	0.699	1.884	0.002	<0.001	0.005	3.355	<0.001	<0.001
	<0.001	0.557	1.079	<0.001	<0.001	0.003	2.012	<0.001	<0.001
	<0.001	0.454	0.957	0.001	<0.001	<0.001	1.448	<0.001	<0.001
	<0.001	0.214	0.648	<0.001	<0.001	<0.001	0.935	<0.001	<0.001
	<0.001	0.276	0.920	<0.001	<0.001	<0.001	1.481	<0.001	<0.001
	<0.001	0.208	0.831	<0.001	<0.001	<0.001	1.231	<0.001	<0.001

Table 9.2.4.1- 10: FOCUS PELMO PEC_{gw} results of trifloxystrobin and its major degradation products in µg/L (Vines, late, 3×125 g a.s./ha, 60/70/70% interception, 10 days app. interval)

Scenario	Trifloxystrobin	CGA 321113	NOA 413161	CGA 357276	CGA 357261	CGA 373466	NOA 413163	NOA 409480	CGA 381318
[redacted]	<0.001	0.471	1.277	<0.001	<0.001	0.001	2.163	<0.001	<0.001
	<0.001	0.763	2.055	0.003	<0.001	0.006	3.674	<0.001	<0.001
	<0.001	0.677	1.281	<0.001	<0.001	0.004	2.442	<0.001	<0.001
	<0.001	0.537	0.874	0.001	<0.001	0.003	1.471	<0.001	<0.001
	<0.001	0.299	0.699	<0.001	<0.001	0.001	1.083	<0.001	<0.001
	<0.001	0.153	0.741	<0.001	<0.001	<0.001	1.087	<0.001	<0.001
	<0.001	0.157	0.801	<0.001	<0.001	<0.001	1.157	<0.001	<0.001

Vines, early, 3×125 g a.s./ha

Table 9.2.4.1- 11: FOCUS PEARL PEC_{gw} results of trifloxystrobin and its major degradation products in µg/L (Vines, early, 3×125 g a.s./ha, 3×60% interception, 10 days app. interval)

Scenario	Trifloxystrobin	CGA 321113	NOA 413161	CGA 357276	CGA 357261	CGA 373466	NOA 413163	NOA 409480	CGA 381318
[redacted]	<0.001	0.631	1.881	<0.001	<0.001	<0.001	3.133	<0.001	<0.001
[redacted]	<0.001	0.700	2.013	0.002	<0.001	0.002	3.480	<0.001	<0.001
[redacted]	<0.001	0.544	1.194	<0.001	<0.001	0.002	2.114	<0.001	<0.001
[redacted]	<0.001	0.462	1.087	0.001	<0.001	0.001	1.636	<0.001	<0.001
[redacted]	<0.001	0.253	0.699	<0.001	<0.001	<0.001	1.030	<0.001	<0.001
[redacted]	<0.001	0.385	1.144	<0.001	<0.001	<0.001	1.763	<0.001	<0.001
[redacted]	<0.001	0.204	0.959	<0.001	<0.001	<0.001	1.377	<0.001	<0.001

Table 9.2.4.1- 12: FOCUS PELMO PEC_{gw} results of trifloxystrobin and its major degradation products in µg/L (Vines, early, 3×125 g a.s./ha, 3×60% interception, 10 days app. interval)

Scenario	Trifloxystrobin	CGA 321113	NOA 413161	CGA 357276	CGA 357261	CGA 373466	NOA 413163	NOA 409480	CGA 381318
[redacted]	<0.001	0.666	1.685	<0.001	<0.001	0.001	2.992	<0.001	<0.001
[redacted]	<0.001	0.765	2.252	0.003	<0.001	0.004	3.782	<0.001	<0.001
[redacted]	<0.001	0.690	1.539	<0.001	<0.001	0.004	2.840	<0.001	<0.001
[redacted]	<0.001	0.686	1.150	0.002	<0.001	0.008	2.072	<0.001	<0.001
[redacted]	<0.001	0.431	0.813	<0.001	<0.001	0.001	1.461	<0.001	<0.001
[redacted]	<0.001	0.251	0.934	<0.001	<0.001	<0.001	1.385	<0.001	<0.001
[redacted]	<0.001	0.264	1.062	<0.001	<0.001	<0.001	1.629	<0.001	<0.001

Strawberry, late, 2×150 g a.s./ha

Table 9.2.4.1- 13: FOCUS PEARL PEC_{gw} results of trifloxystrobin and its major degradation products in µg/L (Strawberry, late, 2×150 g a.s./ha, 2×60% interception, 7 days app. interval)

Scenario	Trifloxystrobin	CGA 321113	NOA 413161	CGA 357276	CGA 357261	CGA 373466	NOA 413163	NOA 409480	CGA 381318
[redacted]	<0.001	0.582	2.487	0.001	<0.001	0.001	4.122	<0.001	<0.001
[redacted]	<0.001	0.216	2.116	<0.001	<0.001	<0.001	3.537	<0.001	<0.001
[redacted]	<0.001	0.441	1.083	<0.001	<0.001	<0.001	1.881	<0.001	<0.001
[redacted]	<0.001	0.021	0.279	<0.001	<0.001	<0.001	0.250	<0.001	<0.001

Table 9.2.4.1- 14: FOCUS PELMO PEC_{gw} results of trifloxystrobin and its major degradation products in µg/L (Strawberry, late, 2×150 g a.s./ha, 2×60% interception, 7 days app. interval)

Scenario	Trifloxystrobin	CGA 321113	NOA 413161	CGA 357276	CGA 357261	CGA 373466	NOA 413163	NOA 409480	CGA 381318
[redacted]	<0.001	0.597	1.751	0.002	<0.001	0.002	2.825	<0.001	<0.001
[redacted]	<0.001	0.214	1.958	<0.001	<0.001	<0.001	3.301	<0.001	<0.001
[redacted]	<0.001	0.486	1.215	<0.001	<0.001	0.001	2.176	<0.001	<0.001
[redacted]	<0.001	0.017	0.166	<0.001	<0.001	<0.001	0.178	<0.001	<0.001

Strawberry, early, 2×125 g a.s./ha

Table 9.2.4.1- 15: FOCUS PEARL PEC_{gw} results of trifloxystrobin and its major degradation products in µg/L (Strawberry, early, 2×125 g a.s./ha, 2×30% interception, 7 days app. interval)

Scenario	Trifloxystrobin	CGA 321113	NOA 413161	CGA 357276	CGA 357261	CGA 373466	NOA 413163	NOA 409480	CGA 381318
[redacted]	<0.001	0.820	3.507	0.002	<0.001	0.003	5.905	<0.001	<0.001
[redacted]	<0.001	0.283	2.984	<0.001	<0.001	<0.001	4.706	<0.001	<0.001
[redacted]	<0.001	0.607	1.611	<0.001	<0.001	<0.001	2.823	<0.001	<0.001
[redacted]	<0.001	0.034	0.384	<0.001	<0.001	<0.001	0.400	<0.001	<0.001

Table 9.2.4.1- 16: FOCUS PELMO PEC$_{gw}$ results of trifloxystrobin and its major degradation products in µg/L (Strawberry, early, 2×125 g a.s./ha, 2×30% interception, 7 days app. interval)

Scenario	Trifloxystrobin	CGA 321113	NOA 413161	CGA 357276	CGA 357261	CGA 373466	NOA 413163	NOA 409480	CGA 381318
[redacted]	<0.001	0.815	2.463	0.003	<0.001	0.003	3.976	<0.001	<0.001
[redacted]	<0.001	0.285	2.825	<0.001	<0.001	<0.001	4.625	<0.001	<0.001
[redacted]	<0.001	0.659	1.806	<0.001	<0.001	0.002	3.316	<0.001	<0.001
[redacted]	<0.001	0.066	0.412	<0.001	<0.001	<0.001	0.704	<0.001	<0.001

CP 9.2.4.2 Additional field tests

No additional field studies were performed.

CP 9.2.5 Estimation of concentrations in surface water and sediment

PEC_{sw} modelling approach

Calculation of PEC values for the active substance according to FOCUS
$FOCUS_{sw}$ is a four step tiered approach:
Step 1: All inputs are considered as a single loading to the water body and a worst-case PEC_{sw} and PEC_{sed} is calculated (most conservative step).
Step 2: Individual loadings into the water body from different entry routes according to the number of applications 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 performed. The scenarios are representative for 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 according to the FOCUS Landscape and Mitigation Factors, i.e. drift reduction or vegetated filter strips, which intercept runoff water and eroded sediment prior to entry into surface water.

Derivation of kinetic modelling input values is presented in MCA Section 7, data point 7.1.2, a summary of modelling input parameters is given in the report KCP 9.2.5/01.

Predicted environmental concentrations in surface water (PEC_{sw}) and sediment (PEC_{sed}) of trifloxystrobin and its major degradation products

For trifloxystrobin, the major degradation products CGA 321113, NOA 413161, CGA 357276, CGA 357261, CGA 373466, NOA 413163, NOA 409480, CGA 357262, CGA 381318, CGA 107170 and 2-hydroxymethylbenzonitrile were considered.

Report:	**KCP 9.2.5/01, [redacted], [redacted]; 2013**
Title:	Trifloxystrobin (TFS): PECsw,sed FOCUS EUR - Use in apples, vines and strawberry in Europe
Document No:	M-469711-01-1 (EnSa-13-0742)
Guidelines:	FOCUS 2003, SANCO/4802/2001 rev 2 FOCUS 2006, SANCO/10058/2005 v. 2.0 FOCUS 2007, SANCO/10422/2005 v. 2.0
GLP:	No (calculation)

Methods and Materials: Predicted environmental concentrations of the active substance trifloxystrobin and its major degradation products CGA 321113, NOA 413161, CGA 357276, CGA 357261, CGA 373466, NOA 413163, NOA 409480, CGA 357262, CGA 381318, CGA 107170 and 2-hydroxymethylbenzonitrile in surface water (PEC_{sw}) and sediment (PEC_{sed}) were calculated for the use in Europe, employing the tiered FOCUS Surface Water (SW) approach (FOCUS, 2003). 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.

The use of the fungicide trifloxystrobin in apples, early, apples, late and vines was assessed according to the Good Agricultural Practice (GAP) in Europe. Detailed application parameters are presented in Table 9.2.5- 1.

Table 9.2.5- 1: General and FOCUS-specific data on the use pattern of trifloxystrobin in Europe (for FOCUS Step 1&2)

Individual Crop	FOCUS crop used for interception	Application			
		Rate per season [g a.s./ha]	Interval [days]	Plant Interception [%]	Growth Stage
Apples, early	Apples	3×75	10	Average crop cover (40%)	31-89 Mar. - May
Apples, late	Apples	3×112.5	10	Full canopy (70%)	55-87 Mar. - May
Grapes	Vines	3×125	10	Minimal crop cover (40%)	12-89 Mar. - May
Strawberry, early	Strawberry	2×125	7	Minimal crop cover (25%)	10-92 Mar. - May
Strawberry, late	Strawberry	2×150	7	Average crop cover (50%)	55-89 Mar. - May

For the use in apples (early and late) and the use in vines, FOCUS Step 3 and Step 4 values were conducted in addition to FOCUS Step 1&2 values.
In FOCUS Step 3, the application date for each scenario is determined by the Pesticide Application Timer (PAT), which is part of the FOCUS SW Scenarios. The user may only define an application time window. The actual application date is then set by the PAT in such a way that there are at least 10 mm of rainfall in the first 10 days after application, and at the same time less than 2 mm of rain per day in a five day period around the date of application. If no such date can be found within the application time window, the above rules are step-wise relaxed. Information on application dates can be found in Table 9.2.5- 2.

Table 9.2.5- 2: Application dates of trifloxystrobin for the FOCUS Step 3 calculations

Parameter	Apples, early		Apples, late		Vines	
PAT start date rel./absolute Appl. method (appl. type) No of appl. PAT window range Appl. interval	Absolute air blast (CAM 2) 3 180 10		Absolute air blast (CAM 2) 3 150 10		Absolute air blast (CAM 2) 3 185 10	
Application Details	**PAT Start Date (Julian Day)**	**Appl. Date**	**PAT Start Date (Julian Day)**	**Appl. Date**	**PAT Start Date (Julian Day)**	**Appl. Date**
D3 (1st)	21-Apr (111)	20-Apr 04-May 17-May	07-May (127)	06-May 17-May 21-Jun	- -	-
D4 (1st)	26-Apr (116)	30-May 04-Jul 27-Aug	11-May (131)	30-May 04-Jul 27-Aug	- -	-
D5 (1st)	07-Apr (97)	08-Apr 22-Apr 11-May	22-Apr (112)	22-Apr 11-May 27-May	-	-
D6 (1st)	- -	-	- -	-	06-Feb (37)	27-Feb 14-Mar 09-Apr
R1 (1st)	21-Apr (111)	26-Apr 09-May 13-Jun	07-May (127)	09-May 13-Jun 05-Jul	18-Apr (108)	26-Apr 09-May 13-Jun
R2 (1st)	21-Mar (80)	22-Mar 22-Apr 07-May	06-Apr (96)	22-Apr 07-May 20-May	18-Mar (77)	22-Mar 22-Apr 07-May
R3 (1st)	07-Apr (97)	11-Apr 22-Apr 18-May	22-Apr (112)	22-Apr 18-May 01-Jun	05-Apr (95)	11-Apr 22-Apr 18-May
R4 (1st)	22-Mar (81)	15-Apr 28-Apr 10-May	07-Apr (97)	15-Apr 28-Apr 10-May	13-Mar (72)	04-May 27-May 12-Aug

Findings:

FOCUS Step 1 and 2: The maximum PEC values for FOCUS Step 1 and 2 are given in the tables below for trifloxystrobin and its major degradation products.

Table 9.2.5- 3: Maximum PEC_{sw} values of trifloxystrobin and its major degradation products according to FOCUS SW Step 2 calculations

Crop	Trifloxystrobin	CGA 357261	CGA 357262	CGA 321113	CGA 373466	CGA 357276
	[µg/L]					
Apples, Early	3.931	3.376	0.828	13.17	5.664	0.319
Apples, Late	5.897	5.063	1.243	15.05	6.155	0.478
Vines	3.345	3.524	0.865	17.66	7.857	0.289
Strawberry, Early	1.150	0.886	0.205	11.27	5.865	0.093
Strawberry, Late	1.380	1.064	0.246	9.709	4.944	0.112
Maximum	5.897	5.063	1.243	17.66	7.857	0.478

Table 9.2.5- 3 (contd.): Maximum PEC_{sw} values of trifloxystrobin and its major degradation products according to FOCUS SW Step 2 calculations

Crop	NOA 413161	NOA 413163	NOA 409480	CGA 381318	CGA 107170	2-hydroxymethyl-benzonitrile-
	[µg/L]					
Apples, Early	0.834	0.870	0.243	0.616	2.033	0.538
Apples, Late	0.626	0.653	0.183	0.462	3.050	0.807
Vines	1.391	1.451	0.406	1.027	2.123	0.561
Strawberry, Early	1.291	1.350	0.379	1.044	0.503	0.133
Strawberry, Late	1.033	1.080	0.304	0.836	0.603	0.159
Maximum	1.391	1.451	0.406	1.044	3.050	0.807

Table 9.2.5- 4: Summary of the maximum PEC_{sw} values in µg/L of trifloxystrobin and its major degradation products (FOCUS Steps 1-2)

Crop	Scenario	Trifloxystrobin	CGA 357261	CGA 357262	CGA 321113	CGA 373466	CGA 357276
Apples, early 3 × 75 g a.s./ha	Step 1	9.927	12.21	1.191	43.33	24.06	1.069
	Step 2						
	N-EU Multi	2.759	3.376	0.828	10.03	4.103	0.277
	S-EU Multi	2.759	3.376	0.828	13.17	5.664	0.277
	N-EU Single	3.931	2.025	0.397	4.589	1.921	0.319
	S-EU Single	3.931	2.025	0.397	5.793	2.624	0.319
Apples, late 3 × 112.5 g a.s./ha	Step 1	14.89	18.32	1.787	64.99	36.09	1.604
	Step 2						
	N-EU Multi	4.138	5.063	1.243	12.70	4.985	0.415
	S-EU Multi	4.138	5.063	1.243	15.05	6.155	0.415
	N-EU Single	5.897	3.037	0.596	5.981	2.355	0.478
	S-EU Single	5.897	3.037	0.596	6.884	2.882	0.478
Vines 3 × 125 g a.s./ha	Step 1	13.34	15.40	1.014	62.92	36.87	1.002
	Step 2						
	N-EU Multi	2.880	3.524	0.865	12.43	5.256	0.289
	S-EU Multi	2.880	3.524	0.865	17.66	7.857	0.289
	N-EU Single	3.345	1.723	0.338	4.887	2.208	0.271
	S-EU Single	3.345	1.723	0.338	6.894	3.379	0.271
Strawberry, early 2 × 125 g a.s./ha	Step 1	11.14	8.003	0.232	37.71	23.11	0.312
	Step 2						
	N-EU Multi	1.024	0.886	0.205	6.501	3.247	0.092
	S-EU Multi	1.024	0.886	0.205	11.27	5.865	0.092
	N-EU Single	1.150	0.592	0.116	3.498	1.820	0.093
	S-EU Single	1.150	0.592	0.116	6.007	3.283	0.093
Strawberry, late 2 × 150 g a.s./ha	Step 1	13.37	9.603	0.279	45.25	27.73	0.374
	Step 2						
	N-EU Multi	1.228	1.064	0.246	5.893	2.849	0.111
	S-EU Multi	1.228	1.064	0.246	9.709	4.944	0.111
	N-EU Single	1.380	0.710	0.139	3.195	1.599	0.112
	S-EU Single	1.380	0.710	0.139	5.202	2.769	0.112

Table 9.2.5- 4 (contd.): Summary of the maximum PEC_{sw} values in µg/L of trifloxystrobin and its major degradation products (FOCUS Steps 1-2)

Crop	Scenario	NOA 413161	NOA 413163	NOA 409480	CGA 381318	CGA 107170	2-hydroxymethyl-benzonitrile
Apples, early 3 × 75 g a.s./ha	Step 1	4.420	4.636	1.313	4.075	2.924	0.773
	Step 2						
	N-EU Multi	0.417	0.435	0.122	0.308	2.033	0.538
	S-EU Multi	0.834	0.870	0.243	0.616	2.033	0.538
	N-EU Single	0.165	0.172	0.049	0.141	0.975	0.258
	S-EU Single	0.329	0.345	0.097	0.282	0.975	0.258
Apples, late 3 × 112.5 g a.s./ha	Step 1	6.630	6.954	1.969	6.112	4.386	1.160
	Step 2						
	N-EU Multi	0.313	0.326	0.091	0.231	3.050	0.807
	S-EU Multi	0.626	0.653	0.183	0.462	3.050	0.807
	N-EU Single	0.123	0.129	0.037	0.106	1.462	0.387
	S-EU Single	0.247	0.259	0.073	0.212	1.462	0.387
Vines 3 × 125 g a.s./ha	Step 1	7.367	7.727	2.188	6.792	2.488	0.658
	Step 2						
	N-EU Multi	0.695	0.725	0.203	0.513	2.123	0.561
	S-EU Multi	1.391	1.451	0.406	1.027	2.123	0.561
	N-EU Single	0.274	0.287	0.081	0.235	0.829	0.219
	S-EU Single	0.549	0.574	0.162	0.470	0.829	0.219
Strawberry, early 2 × 125 g a.s./ha	Step 1	4.911	5.151	1.459	4.528	0.570	0.151
	Step 2						
	N-EU Multi	0.645	0.675	0.190	0.522	0.503	0.133
	S-EU Multi	1.291	1.350	0.379	1.044	0.503	0.133
	N-EU Single	0.343	0.359	0.101	0.294	0.285	0.075
	S-EU Single	0.686	0.718	0.203	0.588	0.285	0.075
Strawberry, late 2 × 150 g a.s./ha	Step 1	5.894	6.182	1.750	5.433	0.684	0.181
	Step 2						
	N-EU Multi	0.516	0.540	0.152	0.418	0.603	0.159
	S-EU Multi	1.033	1.080	0.304	0.836	0.603	0.159
	N-EU Single	0.274	0.287	0.081	0.235	0.342	0.090
	S-EU Single	0.549	0.574	0.162	0.470	0.342	0.090

Table 9.2.5- 5: Summary of the maximum PEC_{sed} values in µg/kg of trifloxystrobin and its major degradation products (FOCUS Steps 1-2)

Crop	Scenario	Trifloxystrobin	CGA 357261	CGA 357262	CGA 321113	CGA 373466	CGA 357276
	Step 1	142.5	29.91	<0.001	38.58	17.61	9.236
	Step 2						
Apples, early	N-EU Multi	8.023	12.43	<0.001	11.72	3.514	5.472
3 × 75 g a.s./ha	S-EU Multi	8.023	12.43	<0.001	15.51	4.881	6.393
	N-EU Single	11.26	5.960	<0.001	5.348	1.645	2.531
	S-EU Single	11.26	5.960	<0.001	6.801	2.260	2.881
	Step 1	213.8	44.87	<0.001	57.87	26.42	13.85
	Step 2						
Apples, late	N-EU Multi	12.03	18.65	<0.001	14.74	4.247	7.517
3 × 112.5 g a.s./ha	S-EU Multi	12.03	18.65	<0.001	17.58	5.272	8.208
	N-EU Single	16.89	8.941	<0.001	6.933	2.006	3.534
	S-EU Single	16.89	8.941	<0.001	8.022	2.467	3.796
	Step 1	237.5	49.85	<0.001	64.30	29.35	15.39
	Step 2						
Vines	N-EU Multi	8.377	12.98	<0.001	14.59	4.520	6.286
3 × 125 g a.s./ha	S-EU Multi	8.377	12.98	<0.001	20.90	6.797	7.821
	N-EU Single	9.581	5.072	<0.001	5.736	1.901	2.439
	S-EU Single	9.581	5.072	<0.001	8.156	2.926	3.021
	Step 1	237.5	33.23	<0.001	42.87	19.57	10.26
	Step 2						
Strawberry, early	N-EU Multi	3.090	3.073	<0.001	7.746	2.823	2.515
2 × 125 g a.s./ha	S-EU Multi	3.090	3.073	<0.001	13.50	5.115	3.905
	N-EU Single	3.293	1.743	<0.001	4.165	1.582	1.366
	S-EU Single	3.293	1.743	<0.001	7.191	2.863	2.095
	Step 1	285.1	39.88	<0.001	51.44	23.48	9.236
	Step 2						
Strawberry, late	N-EU Multi	3.708	3.687	<0.001	6.993	2.471	5.472
2 × 150 g a.s./ha	S-EU Multi	3.708	3.687	<0.001	11.60	4.305	6.393
	N-EU Single	3.951	2.092	<0.001	3.788	1.386	2.531
	S-EU Single	3.951	2.092	<0.001	6.209	2.411	2.881

Table 9.2.5- 5 (contd.): Summary of the maximum PEC$_{sed}$ values in µg/kg of trifloxystrobin and its major degradation products (FOCUS Steps 1-2)

Crop	Scenario	NOA 413161	NOA 413163	NOA 409480	CGA 381318	CGA 107170	2-hydroxymethyl-benzonitrile
Apples, early 3 × 75 g a.s./ha	Step 1	0.159	0.292	30.93	3.117	<0.001	<0.001
	Step 2						
	N-EU Multi	0.015	0.027	2.868	0.236	<0.001	<0.001
	S-EU Multi	0.030	0.055	5.735	0.471	<0.001	<0.001
	N-EU Single	0.006	0.011	1.145	0.108	<0.001	<0.001
	S-EU Single	0.012	0.022	2.290	0.216	<0.001	<0.001
Apples, late 3 × 112.5 g a.s./ha	Step 1	0.239	0.438	46.39	4.676	<0.001	<0.001
	Step 2						
	N-EU Multi	0.011	0.021	2.151	0.177	<0.001	<0.001
	S-EU Multi	0.023	0.041	4.301	0.353	<0.001	<0.001
	N-EU Single	0.004	0.008	0.859	0.081	<0.001	<0.001
	S-EU Single	0.009	0.016	1.718	0.162	<0.001	<0.001
Vines 3 × 125 g a.s./ha	Step 1	0.265	0.487	51.54	5.196	<0.001	<0.001
	Step 2						
	N-EU Multi	0.025	0.046	4.779	0.393	<0.001	<0.001
	S-EU Multi	0.050	0.091	9.558	0.785	<0.001	<0.001
	N-EU Single	0.010	0.018	1.909	0.180	<0.001	<0.001
	S-EU Single	0.020	0.036	3.817	0.360	<0.001	<0.001
Strawberry, early 2 × 125 g a.s./ha	Step 1	0.177	0.325	34.36	3.464	<0.001	<0.001
	Step 2						
	N-EU Multi	0.023	0.043	4.470	0.400	<0.001	<0.001
	S-EU Multi	0.047	0.085	8.939	0.799	<0.001	<0.001
	N-EU Single	0.012	0.023	2.386	0.225	<0.001	<0.001
	S-EU Single	0.025	0.045	4.771	0.450	<0.001	<0.001
Strawberry, late 2 × 150 g a.s./ha	Step 1	0.212	0.389	41.24	4.157	<0.001	<0.001
	Step 2						
	N-EU Multi	0.019	0.034	3.576	0.320	<0.001	<0.001
	S-EU Multi	0.037	0.068	7.152	0.639	<0.001	<0.001
	N-EU Single	0.010	0.018	1.909	0.180	<0.001	<0.001
	S-EU Single	0.020	0.036	3.817	0.360	<0.001	<0.001

FOCUS Step 3 and 4: The maximum PEC values for FOCUS Step 3 and 4 are given in the tables below for trifloxystrobin considering the application in apples (early and late) and in vines.
Concerning maximum PEC_{sw} values it can be seen from FOCUS Step 3 that the single application results in the worst case PEC_{sw} values in all application scenarios, therefore in the following for FOCUS Step 4 values only PEC_{sw} values for the single application are presented. For other PEC values please refer to the report.

Apples, early, 3×75 g a.s./ha

FOCUS SW Step 3 values for the application in apples, early are presented in Table 9.2.5- 6.

Table 9.2.5- 6: PEC_{sw} and PEC_{sed} values of trifloxystrobin in apples, early for all calculated scenarios according to FOCUS SW Step 3; letters S, D, and R before correspond to the dominant entry path – spray drift, drainage, and runoff

Scenario	Single Application			Multiple Application		
	Entry route	PEC_{sw} [µg/L]	PEC_{sed} [µg/kg]	Entry route	PEC_{sw} [µg/L]	PEC_{sed} [µg/kg]
D3 (ditch, 1st)	S	2.740	1.252	S	1.948	0.889
D4 (pond, 1st)	S	0.123	0.147	S	0.090	0.068
D4 (stream, 1st)	S	2.565	0.140	S	1.970	0.343
D5 (pond, 1st)	S	0.123	0.114	S	0.091	0.100
D5 (stream, 1st)	S	2.511	0.066	S	1.941	0.095
R1 (pond, 1st)	S	0.123	0.117	S	0.090	0.085
R1 (stream, 1st)	S	2.095	0.250	S	1.505	0.199
R2 (stream, 1st)	S	2.776	0.164	S	2.016	0.152
R3 (stream, 1st)	S	2.964	0.595	S	2.116	0.466
R4 (stream, 1st)	S	2.108	0.284	S	1.504	0.215

FOCUS SW Step 4 values for the application in apples, early (single) are presented in Table 9.2.5- 7.

Table 9.2.5- 7: Summary of <u>FOCUS Step 4</u> PEC_{sw} values of trifloxystrobin after application in <u>apples, early</u>; S and M denote whether single or multiple application lead to the maximum value; SD and RO denote spray drift and runoff buffer, respectively

Buffer Width & Type	Scenario	PEC_{sw} [µg/L] Drift Reduction 0%		50%		75%		90%	
0m SD	D3 (ditch, 1st)	S	2.740	S	1.370	S	0.685	S	0.274
	D4 (pond, 1st)	S	0.123	S	0.062	S	0.031	S	0.012
	D4 (stream, 1st)	S	2.565	S	1.283	S	0.641	S	0.256
	D5 (pond, 1st)	S	0.123	S	0.062	S	0.031	S	0.012
	D5 (stream, 1st)	S	2.511	S	1.255	S	0.627	S	0.251
	R1 (pond, 1st)	S	0.123	S	0.062	S	0.031	S	0.012
	R1 (stream, 1st)	S	2.095	S	1.048	S	0.524	S	0.209
	R2 (stream, 1st)	S	2.776	S	1.388	S	0.694	S	0.277
	R3 (stream, 1st)	S	2.964	S	1.482	S	0.741	S	0.296
	R4 (stream, 1st)	S	2.108	S	1.054	S	0.527	S	0.211
5m SD	D3 (ditch, 1st)	S	1.849	S	0.924	S	0.462	S	0.185
	D4 (pond, 1st)	S	0.141	S	0.070	S	0.035	S	0.014
	D4 (stream, 1st)	S	2.003	S	1.001	S	0.501	S	0.200
	D5 (pond, 1st)	S	0.141	S	0.070	S	0.035	S	0.014
	D5 (stream, 1st)	S	1.960	S	0.980	S	0.490	S	0.196
	R1 (pond, 1st)	S	0.141	S	0.070	S	0.035	S	0.014
	R1 (stream, 1st)	S	1.636	S	0.818	S	0.409	S	0.163
	R2 (stream, 1st)	S	2.167	S	1.083	S	0.542	S	0.217
	R3 (stream, 1st)	S	2.314	S	1.157	S	0.578	S	0.231
	R4 (stream, 1st)	S	1.645	S	0.823	S	0.411	S	0.164
10m SD	D3 (ditch, 1st)	S	0.826	S	0.413	S	0.206	S	0.083
	D4 (pond, 1st)	S	0.078	S	0.039	S	0.020	S	0.008
	D4 (stream, 1st)	S	0.895	S	0.447	S	0.224	S	0.089
	D5 (pond, 1st)	S	0.078	S	0.039	S	0.020	S	0.008
	D5 (stream, 1st)	S	0.876	S	0.438	S	0.219	S	0.088
	R1 (pond, 1st)	S	0.078	S	0.039	S	0.020	S	0.008
	R1 (stream, 1st)	S	0.731	S	0.365	S	0.183	S	0.073
	R2 (stream, 1st)	S	0.968	S	0.484	S	0.242	S	0.097
	R3 (stream, 1st)	S	1.034	S	0.517	S	0.258	S	0.103
	R4 (stream, 1st)	S	0.735	S	0.368	S	0.184	S	0.074

Apples, late, 3×112.5 g a.s./ha

FOCUS SW Step 3 values for the application in apples, late are presented in Table 9.2.5- 8.

Table 9.2.5- 8: PEC_{sw} and PEC_{sed} values of trifloxystrobin in apples, late for all calculated scenarios according to FOCUS SW Step 3; letters S, D, and R before correspond to the dominant entry path – spray drift, drainage, and runoff

Scenario	Single Application			Multiple Application		
	Entry route	PEC_{sw} [µg/L]	PEC_{sed} [µg/kg]	Entry route	PEC_{sw} [µg/L]	PEC_{sed} [µg/kg]
D3 (ditch, 1st)	S	4.115	1.589	S	2.925	1.232
D4 (pond, 1st)	S	0.185	0.140	S	0.134	0.102
D4 (stream, 1st)	S	3.981	0.329	S	2.956	0.513
D5 (pond, 1st)	S	0.185	0.171	S	0.134	0.125
D5 (stream, 1st)	S	4.079	0.193	S	3.085	0.327
R1 (pond, 1st)	S	0.185	0.141	S	0.134	0.103
R1 (stream, 1st)	S	3.108	0.287	S	2.261	0.304
R2 (stream, 1st)	S	4.170	0.250	S	3.024	0.232
R3 (stream, 1st)	S	4.446	0.891	S	3.187	0.649
R4 (stream, 1st)	S	3.161	0.426	S	2.257	0.323

FOCUS SW Step 4 values for the application in apples, late (single) are presented in Table 9.2.5- 9.

Table 9.2.5- 9: Summary of FOCUS Step 4 PEC$_{sw}$ values of trifloxystrobin after application in apples, late; S and M denote whether single or multiple application lead to the maximum value; SD and RO denote spray drift and runoff buffer, respectively

Buffer Width & Type	Scenario	PEC$_{sw}$ [µg/L] Drift Reduction							
		0%		50%		75%		90%	
0m SD	D3 (ditch, 1st)	S	4.115	S	2.058	S	1.029	S	0.411
	D4 (pond, 1st)	S	0.185	S	0.092	S	0.046	S	0.019
	D4 (stream, 1st)	S	3.981	S	1.990	S	0.995	S	0.398
	D5 (pond, 1st)	S	0.185	S	0.092	S	0.046	S	0.019
	D5 (stream, 1st)	S	4.079	S	2.039	S	1.020	S	0.408
	R1 (pond, 1st)	S	0.185	S	0.092	S	0.046	S	0.019
	R1 (stream, 1st)	S	3.108	S	1.554	S	0.777	S	0.311
	R2 (stream, 1st)	S	4.170	S	2.085	S	1.042	S	0.417
	R3 (stream, 1st)	S	4.446	S	2.223	S	1.112	S	0.445
	R4 (stream, 1st)	S	3.161	S	1.580	S	0.790	S	0.316
5m SD	D3 (ditch, 1st)	S	2.775	S	1.388	S	0.694	S	0.277
	D4 (pond, 1st)	S	0.211	S	0.106	S	0.053	S	0.021
	D4 (stream, 1st)	S	3.108	S	1.554	S	0.777	S	0.311
	D5 (pond, 1st)	S	0.211	S	0.106	S	0.053	S	0.021
	D5 (stream, 1st)	S	3.184	S	1.592	S	0.796	S	0.318
	R1 (pond, 1st)	S	0.211	S	0.106	S	0.053	S	0.021
	R1 (stream, 1st)	S	2.426	S	1.213	S	0.606	S	0.243
	R2 (stream, 1st)	S	3.255	S	1.628	S	0.814	S	0.325
	R3 (stream, 1st)	S	3.471	S	1.736	S	0.868	S	0.347
	R4 (stream, 1st)	S	2.468	S	1.234	S	0.617	S	0.247
10m SD	D3 (ditch, 1st)	S	1.240	S	0.620	S	0.310	S	0.124
	D4 (pond, 1st)	S	0.117	S	0.059	S	0.029	S	0.012
	D4 (stream, 1st)	S	1.389	S	0.694	S	0.347	S	0.139
	D5 (pond, 1st)	S	0.117	S	0.059	S	0.029	S	0.012
	D5 (stream, 1st)	S	1.423	S	0.711	S	0.356	S	0.142
	R1 (pond, 1st)	S	0.117	S	0.059	S	0.029	S	0.012
	R1 (stream, 1st)	S	1.084	S	0.542	S	0.271	S	0.108
	R2 (stream, 1st)	S	1.455	S	0.727	S	0.364	S	0.145
	R3 (stream, 1st)	S	1.551	S	0.775	S	0.388	S	0.155
	R4 (stream, 1st)	S	1.103	S	0.551	S	0.276	S	0.110

Vines, 3×125 g a.s./ha

FOCUS SW Step 3 values for the application in vines are presented in Table 9.2.5- 10.

Table 9.2.5- 10: PEC_{sw} and PEC_{sed} values of trifloxystrobin in vines for all calculated scenarios according to FOCUS SW Step 3; letters S, D, and R before correspond to the dominant entry path – spray drift, drainage, and runoff

Scenario	Single Application			Multiple Application		
	Entry route	PEC_{sw} [µg/L]	PEC_{sed} [µg/kg]	Entry route	PEC_{sw} [µg/L]	PEC_{sed} [µg/kg]
D6 (ditch, 1st)	S	2.092	0.485	S	1.818	0.928
R1 (pond, 1st)	S	0.076	0.073	S	0.064	0.061
R1 (stream, 1st)	S	1.555	0.178	S	1.335	0.173
R2 (stream, 1st)	S	2.062	0.120	S	1.787	0.132
R3 (stream, 1st)	S	2.200	0.420	S	1.875	0.393
R4 (stream, 1st)	S	1.555	0.177	S	1.338	0.170

FOCUS SW Step 4 values for the application in vines (single) are presented in Table 9.2.5- 11.

Table 9.2.5- 11: Summary of FOCUS Step 4 PEC_{sw} values of trifloxystrobin after application in vines; S and M denote whether single or multiple application lead to the maximum value; SD and RO denote spray drift and runoff buffer, respectively

Buffer Width & Type	Scenario	PEC_{sw} [µg/L] Drift Reduction							
		0%		50%		75%		90%	
0m SD	D6 (ditch, 1st)	S	2.092	S	1.046	S	0.523	S	0.209
	R1 (pond, 1st)	S	0.076	S	0.038	S	0.019	S	0.008
	R1 (stream, 1st)	S	1.555	S	0.778	S	0.389	S	0.155
	R2 (stream, 1st)	S	2.062	S	1.031	S	0.515	S	0.206
	R3 (stream, 1st)	S	2.200	S	1.100	S	0.550	S	0.220
	R4 (stream, 1st)	S	1.555	S	0.777	S	0.389	S	0.155
5m SD	D6 (ditch, 1st)	S	1.265	S	0.633	S	0.316	S	0.126
	R1 (pond, 1st)	S	0.088	S	0.044	S	0.022	S	0.009
	R1 (stream, 1st)	S	1.133	S	0.566	S	0.283	S	0.113
	R2 (stream, 1st)	S	1.502	S	0.751	S	0.375	S	0.150
	R3 (stream, 1st)	S	1.603	S	0.801	S	0.401	S	0.160
	R4 (stream, 1st)	S	1.133	S	0.566	S	0.283	S	0.113
10m SD	D6 (ditch, 1st)	S	0.458	S	0.229	S	0.115	S	0.046
	R1 (pond, 1st)	S	0.049	S	0.024	S	0.012	S	0.005
	R1 (stream, 1st)	S	0.410	S	0.205	S	0.103	S	0.041
	R2 (stream, 1st)	S	0.544	S	0.272	S	0.136	S	0.054
	R3 (stream, 1st)	S	0.580	S	0.290	S	0.145	S	0.058
	R4 (stream, 1st)	S	0.410	S	0.205	S	0.103	S	0.041

CP 9.3 Fate and behaviour in air

For information on the fate and behaviour in air please refer to MCA Section 7, data point 7.3.

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

For information on route and rate of degradation in air and transport via air please refer to MCA Section 7, data points 7.3.1 and 7.3.2.

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.