REGISTRATION REPORT

Part B

Section 9

Ecotoxicology

Detailed summary of the risk assessment

Product code: GLOB1911F

Product name(s): **CURRANDO/ SUBIGON/ COLLECTOR**

Chemical active substance:

Difenoconazole, 500 g/L

Central Zone

Zonal Rapporteur Member State: Poland

CORE ASSESSMENT

Applicant: Globachem NV

Submission date: August 2020

Update: February 2021

MS Finalisation date: May 2021

Revision date: October 2021

Version history

When	What
August 2020	Version submitted by the applicant
December 2020	Applicant's update
February 2021	Applicant's update
May 2021	Version evaluated by zRMS
October 2021	Finalised zRMS version

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9 Ecotoxicology (KCP 10)

9.1 Critical GAP and overall conclusions

Table 9.1-1: Table of critical GAPs

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Use-No. *	Member state(s)	Crop and/or situation (crop destination / purpose of crop)	F, Fn, Fpn G, Gn, Gpn or I **	Pests or Group of pests controlled (additionally: developmental stages of the pest or pest group)	**Application**				**Application rate**			PHI (days)	Remarks: e.g. g safener/ synergist per ha	**Conclusion**						
					Method / Kind	Timing / Growth stage of crop & season	Max. number a) per use b) per crop/ season	Min. interval between applications (days)	L product/ha a) max. rate per appl. b) max. total rate per crop/season	kg as/ha a) max. rate per appl. b) max. total rate per crop/season	Water L/ha min/max			Birds	Mammals	Aquatic	Bees	Non-target arthropods	Soil organisms	Non-target plants
Zonal uses (field or outdoor uses, certain types of protected crops)																				
1	PL, CZ, BE, DE, NL	Potatoes	F	*Alternaria* sp.	Normal downward spraying	BBCH 40-99	a) 1-4 b) 1-4	10	a) 0.250 b) 1.0	a) 0.125 b) 0.500	100-400	14								
2, 3	PL, CZ, BE, DE, NL	Sugar beet/ fodder beet	F	Rust, *Ramularia beticola*, powdery mildew, *Cercospora beticola*	Normal downward spraying	After BBCH 31 till 49	a) 1-2 b) 1-2	14	a) 0.250 b) 0.500	a) 0.125 b) 0.250	100-400	21								
4	PL, CZ, BE, DE	Winter oilseed rape	F	*Phoma lingam*, *Alternaria brassicae*, *Sclerotinia sclerotiorum*, *Erysiphe cruciferarum*, *Pyrenopeziza brassicae*	Normal downward spraying	BBCH 19-69	a) 1-2 b) 1-2	14	a) 0.250 b) 0.500	a) 0.125 b) 0.250	100-400	56	Max. 1 application in autumn							
5	NL	Winter oilseed rape	F	*Phoma lingam*, *Alternaria brassicae*, *Sclerotinia sclerotiorum*, *Erysiphe cruciferarum*, *Pyrenopeziza brassicae*	Normal downward spraying	BBCH 19-69	a) 1-2 b) 1-2	14	a) 0.250 b) 0.500	a) 0.125 b) 0.250	100-400	56	Application timing according to NL-specific conditions							

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
6	PL, CZ, BE, DE, NL	Spring oilseed rape	F	*Phoma lingam, Alternaria brassicae, Sclerotinia sclerotiorum, Erysiphe cruciferarum, Pyrenopeziza brassicae*	Normal downward spraying	BBCH 19-69	a) 1-2 b) 1-2	14	a) 0.250 b) 0.500	a) 0.125 b) 0.250	100-400	56	Max. 1 application before BBCH 21							

* Use number(s) in accordance with the list of all intended GAPs in Part B, Section 0 should be given in column 1

** F: professional field use, Fn: non-professional field use, Fpn: professional and non-professional field use, G: professional greenhouse use, Gn: non-professional greenhouse use, Gpn: professional and non-professional greenhouse use, I: indoor application

Explanation for column 15 – 21 "Conclusion"

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

Remarks table:

(1) Numeration necessary to allow references
(2) Use official codes/nomenclatures of EU
(3) For crops, the EU and Codex classifications (both) should be used; where relevant, the use situation should be described (*e.g.* fumigation of a structure)
(4) F: professional field use, Fn: non-professional field use, Fpn: professional and non-professional field use, G: professional greenhouse use, Gn: non-professional greenhouse use, Gpn: professional and non-professional greenhouse use, I: indoor application
(5) Scientific names and EPPO-Codes of target pests/diseases/ weeds or when relevant the common names of the pest groups (e.g. biting and sucking insects, soil born insects, foliar fungi, weeds) and the developmental stages of the pests and pest groups at the moment of application must be named
(6) Method, e.g. high volume spraying, low volume spraying, spreading, dusting, drench
Kind, e.g. overall, broadcast, aerial spraying, row, individual plant, between the plants - type of equipment used must be indicated
(7) Growth stage at first and last treatment (BBCH Monograph, Growth Stages of Plants, 1997, Blackwell, ISBN 3-8263-3152-4), including where relevant, information on season at time of application
(8) The maximum number of application possible under practical conditions of use must be provided
(9) Minimum interval (in days) between applications of the same product.
(10) For specific uses other specifications might be possible, e.g.: g/m³ in case of fumigation of empty rooms. See also EPPO-Guideline PP 1/239 Dose expression for plant protection products
(11) The dimension (g, kg) must be clearly specified. (Maximum) dose of a.s. per treatment (usually g, kg or L product / ha).
(12) If water volume range depends on application equipments (e.g. ULVA or LVA) it should be mentioned under "application: method/kind".
(13) PHI - minimum pre-harvest interval
(14) Remarks may include: Extent of use/economic importance/restrictions

9.1.1 Overall conclusions

9.1.1.1 Effects on birds (KCP 10.1.1), Effects on terrestrial vertebrates other than birds (KCP 10.1.2), Effects on other terrestrial vertebrate wildlife (reptiles and amphibians) (KCP 10.1.3)

The TERa and TERlt values exceed the triggers of 10 and 5 for the acute and long-term assessment respectively, indicating that Difenoconazole and metabolite CGA131013 does not pose an acute nor a long-term risk to wild birds and mammals after the use of GLOB1911F according to the intended GAP.

The ratio of the effective application rate and acute and reproductive endpoints for Difenoconazole do not exceed the threshold value of 3000 as given by EFSA/2009/1438 for more sorptive substances (Koc ≥ 500 L/kg). Therefore, there is low risk of acute/long term toxicity to birds and mammals from the uptake of contaminated drinking water and no further assessment is required.

Difenoconazole has a log P_{OW} value of 4.36, hence the risk from secondary poisoning was considered. The long-term TERs for secondary poisoning via earthworms and fish based on 21 days TWA PEC_{soil} and 21 days TWA PEC_{sw} values were all above the Annex VI trigger of 5, indicating acceptable risks.
Therefore, the risk for birds and mammals through secondary poisoning from the intended use of GLOB1911F according to the proposed GAP is acceptable.

9.1.1.2 Effects on aquatic organisms (KCP 10.2)

The TERa and TERlt for GLOB1911F, the active substances and the metabolites are above the Annex VI trigger values, indicating that GLOB1911F poses low acute and chronic risk to aquatic organisms when the following risk mitigation measures are taken into account (when D3, D4, R1 FOCUS scenarios are relevant):

Potato 4 x 0.125 kg a.s./ha:
- 10m vegetated buffer strip + 10 m non-sprayed buffer strip

Sugar beet 3 x 0.125 kg a.s./ha:
- 10m vegetated buffer strip+ 10 m non-sprayed buffer strip

Winter oilseed rape 2 x 0.125 kg a.s./ha:
- 10m vegetated buffer strip+ 10 m non-sprayed buffer strip

Spring oilseed rape 2 x 0.125 kg a.s./ha:
- 10m vegetated buffer strip+ 10 m non-sprayed buffer strip

~~A second possibility the applicant proposes, is to mention restriction sentence "To protect aquatic organisms from run-off in surface water do not apply on run-off endangered areas" on the label and following mitigation measures.~~

~~Potato 4 x 0.125 kg a.s./ha:~~
- ~~50% drift reducing nozzles~~
  ~~Or~~
- ~~5m no-spray bufferzone~~

~~Sugar beet 2 x 0.125 kg a.s./ha:~~
- ~~75% drift reducing nozzles~~

~~Or~~
~~— 5m no-spray bufferzone~~

~~Winter oilseed rape 2 x 0.125 kg a.s./ha:~~
~~— 75% drift-reducing nozzles~~
~~Or~~
~~— 5m no-spray bufferzone~~

~~Spring oilseed rape 2 x 0.125 kg a.s./ha:~~
~~— 75% drift-reducing nozzles~~
~~Or~~
~~— 5m no-spray bufferzone~~

zRMS Comments:	As a rule, all relevant scenarios Di and Ri are considered in risk assessment for aquatic organisms. None of scenario could be excluded.

9.1.1.3 Effects on bees (KCP 10.3.1)

The hazard quotients after oral and contact exposures are below the trigger value of 50. Therefore an acceptable acute risk to bees is expected from the application of GLOB1911F according to the intended GAP.

The chronic TERs for honey bee adults and larvae are higher than the trigger of 1, indicating that the proposed uses according to the intended GAP of GLOB1911F poses an acceptable chronic risk to honey bee adults and larvae.

9.1.1.4 **The hazard quotients after oral and contact exposures are below the trigger value of 50. Therefore an acceptable acute risk to bees is expected from the application of GLOB1911F according to the intended GAP.**

The chronic TERs for honey bee adults and larvae are higher than the trigger of 1, indicating that the proposed uses according to the intended GAP of GLOB1911F poses an acceptable chronic risk to honey bee adults and larvae.

9.1.1.5 Effects on arthropods other than bees (KCP 10.3.2)

The in-field and off-field hazard quotient values were below the trigger value of 1. Overall, it is concluded that the risk to non-target arthropods is low for the intended uses of GLOB1911F.

9.1.1.6 Effects on non-target soil meso- and macrofauna (KCP 10.4), Effects on soil microbial activity (KCP 10.5)

The long-term TER values for *Folsomia candida* and *Hypoaspis aculeifer* exceed the Annex VI long-term trigger values of 5, indicating that GLOB1911F poses a low long-term risk to other non-target soil organisms when applied according to the intended GAP.

The acute-term TER values for earthworms exceed the Annex VI acute-term trigger values of 10, indicating that GLOB1911F poses a low acute risk to earthworms when applied according to the intended GAP.

Based on a higher-tier field study with earthworms, it can be concluded that the chronic risk of GLOB1911F to earthworms is acceptable in accordance with the intended GAP.

As the $PEC_{soil,\ accumulation}$ of Difenoconazole and its metabolites and the formulation are all lower than the concentration at which no significant effects are detected, it can be concluded that the risk of GLOB1911F to soil micro-organisms is acceptable in accordance with the intended GAP.

9.1.1.7 As the PECsoil, accumulation of Difenoconazole and its metabolites and the formulation are all lower than the concentration at which no significant effects are detected, it can be concluded that the risk of GLOB1911F to soil micro-organisms is acceptable in accordance with the intended use.

9.1.1.8 Effects on non-target terrestrial plants (KCP 10.6)

First tier risk assessment indicates that there is no unacceptable risk from GLOB1911F for non-target plants when applied according to the proposed use rates.

9.1.1.9 Effects on other terrestrial organisms (flora and fauna) (KCP 10.7)

Tests on other non-target species are not required.

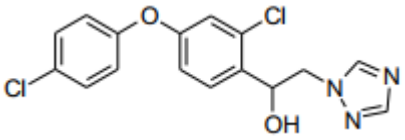
9.1.2 Grouping of intended uses for risk assessment

/

9.1.3 Consideration of metabolites

A list of metabolites found in environmental compartments is provided below. The need for conducting a metabolite-specific risk assessment in the context of the evaluation of GLOB1911F is indicated in the table.

Table 9.1-2 Metabolites of Difenoconazole

Metabolite	Chemical structure	Molar mass	Maximum occurrence in compartments	Risk assessment required?
CGA205375		350	Soil: 11.9% Water/sediment: 11.6%	Yes, soil organisms and aquatic organisms
CGA71019		69	Soil: 23.4% Water/sediment: 9.6%	Yes, soil organisms and aquatic organisms

9.2 Effects on birds (KCP 10.1.1)

zRMS Comments:	The toxicity data for acute and long-term risk were agreed at the EU level. For acute risk assessment, the short-term dietary LDD_{50} = 349 mg/kg bw/d was taken into account. The proposed use pattern of GLOB1911F was taken into consideration. The active substance and its metabolite CGA 131013 were considered. **Difenoconazole**. The screening step and first tier assessment of the acute and long-term risk for birds, respectively, confirmed an acceptable risk for formulation proposed use pattern. **Metabolite CGA131013**. The metabolite 100% formation, as the worst case, was used in risk assessment. The correction factor based on molecular weights was accepted. The NOAEL value of 9.71 mg a.s./kg bw/day for metabolite was corrected in in Tables 9.2-7 to 9.2-9; the TERlt values are correct. The acute and long term risk is acceptable. The risk for birds via drinking water is acceptable. The risk for earthworm-eating and fish-eating birds is also acceptable. The risk to birds following application of GLOB1911F in accordance with the proposed use is acceptable.

9.2.1 Toxicity data

Avian toxicity studies have been carried out with Difenoconazole and its relevant metabolite CGA131013. Full details of these studies are provided in the respective EU DAR and related documents.

Effects on birds for GLOB1911F were not evaluated as part of the EU review of Difenoconazole. However further data on GLOB1911F are not relevant as active substance data on toxicity to birds is used and additional formulation data are not considered essential.
The EU agreed endpoints for the avian toxicity studies are summarized in tables 9.2-1 below.

Table 9.2-1: Endpoints and effect values relevant for the risk assessment for birds

Species	Substance	Exposure System	Results*	Reference
Japanese quail	Difenoconazole	Oral 1 d Acute	LD_{50} > 2000 mg/kg bw	EFSA, 2011 SE, 2006
Mallard duck	Difenoconazole	Dietary 8 d Short-term	LDD_{50} > **349 mg/kg bw/d**	EFSA, 2011 SE, 2006
	CGA131013	Dietary 8 d Short-term	LDD_{50} > 1342 mg/kg bw/d	EFSA, 2011 SE, 2006
Bobwhite quail	Difenoconazole	Dietary 8 d Short-term	LD_{50} > 392 mg/kg bw/d	EFSA, 2011 SE, 2006
		Dietary Reproductive toxicity	**NOEL = 9.71 mg/kg bw/d**	EFSA, 2011 SE, 2006

*Endpoints given in bold are used in the risk assessment.

According to the guidance of EFSA, when the dietary LD_{50} is lower than the acute LD_{50}, the dietary LDD_{50} has to be used in the acute risk assessment (EFSA Journal 2009; 7(12):1438; p.16; section 2.2.). Considering the mortality and the clinic effects in the dietary study on *Colinus virginianus* (Bobwhite quail), the acute risk assessment is conducted with this dietary LDD_{50}. For the chronic risk assessment, the long-term dietary NOEL of 9.71 mg/kg bw/d is used, as EFSA/2009/1438 states that the lowest of the acute oral LD_{50}/10 and the lowest NOAEL from the avian reproduction study/studies should be used.

9.2.1.1 Justification for new endpoints

EU agreed endpoints were used in the risk assessment. No deviations were made.

9.2.2 Risk assessment for spray applications

The risk assessment is based on the methods presented in the Guidance Document on Risk Assessment for Birds and Mammals on request from EFSA (EFSA Journal 2009; 7(12): 1438; hereafter referred to as EFSA/2009/1438).
The risk assessment is performed for the intended uses of GLOB1911F on Potato, Sugar beet and Oilseed rape (winter and spring).

9.2.2.1 First-tier assessment (screening/generic focal species)

Screening step

Exposure to indicator species was estimated according to EFSA/2009/1438. The appropriate exposure scenarios are deemed to be ‘Oilseed rape’, ‘Sugar beet’ and ‘Potato’. The relevant indicator species for all mentioned crop groups at the screening step is that of a small omnivorous bird with short-cut values of 158.8 and 64.8 for acute and long-term assessments respectively.

The DDD (daily dietary dose) for multiple applications was calculated by multiplying the application rate (kg/ha) by the short-cut value and the MAF (multiple application factor to account for multiple

applications). On top of this, for the long term exposure, the result was multiplied by TWA (factor to account for the time weighted average).
This DDD at the screening step is calculated for the intended use on Potato with maximum 4 applications of 0.125 kg a.s./ha with 10 days interval and covers all other intended uses on Sugar beet and Oilseed rape.
Following equations are used:

DDD_{acute} = Application rate (kg a.s./ha) × short-cut value × MAF
DDD_{repro} = Application rate (kg a.s./ha) × short-cut value × MAF × TWA
Where:

- the short-cut value is given by the guidance document
- MAF is the Multiple Application Factor. As worst-case scenario, an MAF considering 4 applications and 10d interval is used (intended use on Potato).
  For the acute risk assessment the MAF_{90} (multiple application factor for 90th percentile residue data) should be used and equals to 1.5 (4 applications, 10d interval)
  For the reproductive risk assessment the MAF_m (multiple application factor assuming mean residue data) should be used and equals to 1.9 (4 applications, 10d interval)
- The term TWA is the time-weighted-average factor. This was used to calculate time-weighted average (TWA) residues on leafy crops, which take into account the degradation of the active substances over time. TWA residues were used as an estimate of long-term exposure only, since it is considered that the use of maximum residues provides an unrealistically extreme worst-case estimate of long-term exposure. As indicated in the Guidance Document, the effects are assumed to be caused by long term exposure by default and thus the TWA of 0.53 applies.

The acute risk to birds of Difenoconazole was assessed by calculating toxicity exposure ratios (TER_A) using the following equation:

$$TER_A = \frac{LD_{50}\ (mg/kg\ bw/day)}{Acute\ DDD\ (mg/kg\ bw/day)}$$

Long-term toxicity exposure ratios (TER_{LT}) for Difenoconazole were calculated using the following equation:

$$TER_{LT} = \frac{NOEL\ (mg/kg\ bw/day)}{Long\text{-}term\ DDD\ (mg/kg\ bw/day)}$$

The results of the acute and reproductive screening step risk assessments for Difenoconazole are summarised in the following tables.

Table 9.2-2: Screening step assessment of the acute and long-term/reproductive risk for birds due to the use of GLOB1911F in Potato (use group Potato) - Difenoconazole

Intended use	**Potato (covers Sugar beet and Oilseed rape)**
Active substance/product	Difenoconazole
Application rate (kg/ha)	4 × 0.125 kg a.s./ha (interval of 10 days)
Acute toxicity (mg/kg bw)	>~~392~~ 349
TER criterion	10

Crop scenario **Growth stage**	**Indicator species**	**SV_{90}**	**MAF_{90}**	**DDD_{90}** **(mg/kg bw/d)**	**TER_a**
Potato (covers Sugar beet and Oilseed rape) Screening step	Small omnivorous bird	158.8	1.5	29.775	~~13.165~~ 11.72
Reprod. toxicity (mg/kg bw/d)	9.71				
TER criterion	5				
Crop scenario **Growth stage**	**Indicator species**	**SV_m**	**MAF_m × TWA**	**DDD_m** **(mg/kg bw/d)**	**TER_{lt}**
Potato (covers Sugar beet and Oilseed rape) Screening step	Small omnivorous bird	64.8	1.9 x 0.53	8.1567	**1.19**

SV: shortcut value; MAF: multiple application factor; TWA: time-weighted average factor; DDD: daily dietary dose; TER: toxicity to exposure ratio. TER values shown in bold fall below the relevant trigger.

Table 9.2-3: Screening step assessment of the acute and long-term/reproductive risk for birds due to the use of GLOB1911F in Potato (use group Potato) – metabolite CGA131013

Intended use	**Potato (covers Sugar beet and Oilseed rape)**				
Active substance/product	CGA131013				
Application rate (kg/ha)	4 × 0.048 kg a.s./ha (interval of 10 days)*				
Acute toxicity (mg/kg bw)	1342				
TER criterion	10				
Crop scenario **Growth stage**	**Indicator species**	**SV_{90}**	**MAF_{90}**	**DDD_{90}** **(mg/kg bw/d)**	**TER_a**
Potato (covers Sugar beet and Oilseed rape) Screening step	Small omnivorous bird	158.8	1.5	11.434	117.369
Reprod. toxicity (mg/kg bw/d)	9.75				
TER criterion	5				
Crop scenario **Growth stage**	**Indicator species**	**SV_m**	**MAF_m × TWA**	**DDD_m** **(mg/kg bw/d)**	**TER_{lt}**
Potato (covers Sugar beet and Oilseed rape) Screening step	Small omnivorous bird	64.8	1.9 x 0.53	3.132	**3.113**

SV: shortcut value; MAF: multiple application factor; TWA: time-weighted average factor; DDD: daily dietary dose; TER: toxicity to exposure ratio. TER values shown in bold fall below the relevant trigger.
* For the Difenoconazole metabolite CGA131013, the applicant proposes to use a worst case assumption that 100% of the parent compound is transformed into the metabolite CGA131013, which gives for example an initial concentration of 0.048 kg/ha for this metabolite by taking the difference in molecular weights into account (= 0.125 kg as/ha x 156/406.3).

Based on the screening step, the TER_a value for Difenoconazole and metabolite CGA131013 is greater than the Annex VI triggers of 10 indicating that GLOB1911F presents low acute risk to birds following its application according the intended GAP. Therefore, further risk assessments are not required.

Based on the screening step, the TER_{lt} value for Difenoconazole and metabolite CGA131013 is lower than the Annex VI triggers of 5 indicating that the reproductive risk to birds is not acceptable. Therefore, first-tier reproductive risk assessment is performed.

Tier 1 Reproductive Risk assessment

Since the generic focal species and corresponding shortcut values are dependent on the crop, tier 1 reproductive risk assessment are performed for all intended uses on Potato, Sugar beet and Oilseed rape. Please make reference to the critical GAP shown in Table 9.1-1.
For the use in sugar/fodder beets, risk assessment is performed with 3 applications and interval of 14 days as worst-case and covers the applied use in sugar/fodder beet with 2 applications.

Same equations for DDD_m and TER_{lt} as for the screening step are used.

Table 9.2-4: Tier 1 assessment of the long-term/reproductive risk for birds due to the use of GLOB1911F in Potato (use group Potato) - Difenoconazole

Intended use	**Potato**				
Active substance/product	Difenoconazole				
Application rate (kg/ha)	4 × 0.125 kg a.s./ha (interval of 10 days)				
Reprod. toxicity (mg/kg bw/d)	9.71				
TER criterion	5				
Crop scenario Growth stage	**Generic focal species**	**SV_m**	**MAF_m × TWA**	**DDD_m (mg/kg bw/d)**	**TER_{lt}**
Potato, BBCH ≥40	Small omnivorous bird "lark"	3.3	1.9 x 0.53	0.415	~~23.376~~ 23.398
Potato, BBCH ≥20	Small insectivorous bird "wagtail"	9.7	1.9 x 0.53	1.221	~~7.953~~ 7.952

SV: shortcut value; MAF: multiple application factor; TWA: time-weighted average factor; DDD: daily dietary dose; TER: toxicity to exposure ratio. TER values shown in bold fall below the relevant trigger.

Table 9.2-5: Tier 1 assessment of the acute and long-term/reproductive risk for birds due to the use of GLOB1911F in Sugar beet (use group Sugar beet) - Difenoconazole

Intended use	**Sugar beet**				
Active substance/product	Difenoconazole				
Application rate (kg/ha)	2 × 0.125 kg a.s./ha (interval of 14 days)				
Reprod. toxicity (mg/kg bw/d)	9.71				
TER criterion	5				
Crop scenario Growth stage	**Generic focal species**	**SV_m**	**MAF_m × TWA**	**DDD_m (mg/kg bw/d)**	**TER_{lt}**
Sugar beet, BBCH 30-49	Small granivorous bird "finch"	11.4	1.4 x 0.53	1.057	~~9.183~~ 9.186
Sugar beet, BBCH 20-49	Small insectivorous bird "wagtail" (Diet 100% soil dwelling invertebrates)	2.8	1.4 x 0.53	0.260	37.346
Sugar beet, BBCH 20-49	Small insectivorous bird "wagtail" (Diet 50% ground arthropods 50% foliar arthropods)	9.7	1.4 x 0.53	0.900	10.789

SV: shortcut value; MAF: multiple application factor; TWA: time-weighted average factor; DDD: daily dietary dose; TER: toxicity to exposure ratio. TER values shown in bold fall below the relevant trigger.

Table 9.2-6: Tier 1 assessment of the acute and long-term/reproductive risk for birds due to the use of GLOB1911F in Oilseed rape (use group Oilseed rape) - Difenoconazole

Intended use	**Oilseed rape (winter and spring)**
Active substance/product	Difenoconazole
Application rate (kg/ha)	2 × 0.125 kg a.s./ha (interval of 14 days)
Reprod. toxicity (mg/kg bw/d)	9.71
TER criterion	5

Crop scenario Growth stage	**Generic focal species**	**SV_m**	**MAF_m × TWA**	**DDD_m (mg/kg bw/d)**	**TER_{lt}**
Oilseed rape, BBCH 30-99	Small insectivorous bird “dunnock”	2.7	1.4 x 0.53	0.250	38.774
Oilseed rape, BBCH 10-29	Small omnivorous bird “lark”	10.9	1.4 x 0.53	1.011	9.605
Oilseed rape, BBCH 30-39	Small omnivorous bird “lark”	3.3	1.4 x 0.53	0.306	31.724
Oilseed rape, BBCH ≥40	Small omnivorous bird “lark”	2.7	1.4 x 0.53	0.250	38.774
Oilseed rape, BBCH 20-29	Medium herbivorous/granivorous bird “pigeon”	3.5	1.4 x 0.53	0.325	29.911
Oilseed rape, BBCH 30-39	Medium herbivorous/granivorous bird “pigeon”	1.1	1.4 x 0.53	0.102	95.173
Oilseed rape, BBCH ≥40	Medium herbivorous/granivorous bird “pigeon”	0.9	1.4 x 0.53	0.083	116.322
Oilseed rape, BBCH 20-29	Small insectivorous bird “wagtail”	2.8	1.4 x 0.53	0.260	37.389
Oilseed rape, BBCH 10-19	Large herbivorous bird "goose"	15.9	1.4 x 0.53	1.47	6.61
Oilseed rape, BBCH 10-19	Small insectivorous bird “wagtail”	5.9	1.4 x 0.53	0.547	17.8
Oilseed rape, BBCH 10-19	Medium herbivorous/ granivorous bird "pigeon"	22.7	1.4 x 0.53	2.1	**4.6**

SV: shortcut value; MAF: multiple application factor; TWA: time-weighted average factor; DDD: daily dietary dose; TER: toxicity to exposure ratio. TER values shown in bold fall below the relevant trigger.

zRMS Comments:	The Tier 1 assessment of the long-term reproductive risk for birds was amended in accordance with comment (For sugar beet, the scenario relevant for BBCH 10 -19 is missing). TER values were added in Table 9.2-6 and Table 9.2-9 for active substance and its metabolite CGA131013, respectively. The TERlt value for Medium herbivorous/ granivorous bird "pigeon" is below the

trigger value of 5.

Higher tier assessment.
Based on Prosser, 2010 for winter oilseed rape at autumn (BBCH 10-19, September - November) and spring OSR (BBCH 10-19, March-May) the relevant PT values were taken into consideration. The PT = 0.29 and PT = 0.84 (90th percentile, consumers only) were used for winter OSR and spring OSR, respectively.

Intended use	Winter OSR
Active substance/product	Difenoconazole
Application rate (kg/ha)	2 × 0.125 kg a.s./ha (interval of 14 days)
Reprod. toxicity (mg/kg bw/d)	9.71
TER criterion	5

Crop scenario Growth stage	**Generic focal species**	**SV_m**	**MAF_m × TWA**	**PT**	**DDD_m (mg/kg bw/d)**	**TER_{lt}**
Oilseed rape, BBCH 10-19	Medium herbivorous/ granivorous bird "pigeon"	5.1	1.4 x 0.53	0.29	0.137	70.9

Intended use	Spring OSR
Active substance/product	Difenoconazole
Application rate (kg/ha)	2 × 0.125 kg a.s./ha (interval of 14 days)
Reprod. toxicity (mg/kg bw/d)	9.71
TER criterion	5

Crop scenario Growth stage	**Generic focal species**	**SV_m**	**MAF_m × TWA**	**PT**	**DDD_m (mg/kg bw/d)**	**TER_{lt}**
Oilseed rape, BBCH 10-19	Medium herbivorous/ granivorous bird "pigeon"	5.1	1.4 x 0.53	0.84	0.40	24.3

The application rate of 2 x 125 g a.s./ha confirm the safe use of GLOB1911F in winter and spring oilseed rape.

The risk to birds following application of GLOB1911F in accordance with the proposed use in oilseed rape is acceptable.

Table 9.2-7: Tier 1 assessment of the long-term/reproductive risk for birds due to the use of GLOB1911F in Potato (use group Potato) – metabolite CGA131013

Intended use	**Potato**				
Active substance/product	Metabolite CGA131013				
Application rate (kg/ha)	4 × 0.048 kg a.s./ha (interval of 10 days)*				
Reprod. toxicity (mg/kg bw/d)	~~9.75~~ 9.71				
TER criterion	5				
Crop scenario Growth stage	**Generic focal species**	**SV_m**	**MAF_m × TWA**	**DDD_m (mg/kg bw/d)**	**TER_{lt}**
Potato, BBCH ≥40	Small omnivorous bird "lark"	3.3	1.9 x 0.53	0.160	~~60.874~~ 60.69
Potato, BBCH ≥20	Small insectivorous bird "wagtail"	9.7	1.9 x 0.53	0.469	~~20.710~~ 20.70

SV: shortcut value; MAF: multiple application factor; TWA: time-weighted average factor; DDD: daily dietary dose; TER: toxicity to exposure ratio. TER values shown in bold fall below the relevant trigger.
* For the Difenoconazole metabolite CGA131013, the applicant proposes to use a worst case assumption that 100% of the parent compound is transformed into the metabolite CGA131013, which gives for example an initial concentration of 0.048 kg/ha for this metabolite by taking the difference in molecular weights into account (= 0.125 kg as/ha x 156/406.3).

Table 9.2-8: Tier 1 assessment of the acute and long-term/reproductive risk for birds due to the use of GLOB1911F in Sugar beet (use group Sugar beet) – metabolite CGA131013

Intended use	**Sugar beet**				
Active substance/product	Metabolite CGA131013				
Application rate (kg/ha)	2 × 0.048 kg a.s./ha (interval of 14 days)*				
Reprod. toxicity (mg/kg bw/d)	~~9.75~~ 9.71				
TER criterion	5				
Crop scenario Growth stage	**Generic focal species**	**SV_m**	**MAF_m × TWA**	**DDD_m (mg/kg bw/d)**	**TER_{lt}**
Sugar beet, BBCH 30-49	Small granivorous bird "finch"	11.4	1.4 x 0.53	0.406	23.915
Sugar beet, BBCH 20-49	Small insectivorous bird "wagtail" (Diet 100% soil dwelling invertebrates)	2.8	1.4 x 0.53	0.100	~~97.368~~ 97.10
Sugar beet, BBCH 20-49	Small insectivorous bird "wagtail" (Diet 50% ground arthropods 50% foliar arthropods)	9.7	1.4 x 0.53	0.345	~~28.106~~ 28.145

SV: shortcut value; MAF: multiple application factor; TWA: time-weighted average factor; DDD: daily dietary dose; TER: toxicity to exposure ratio. TER values shown in bold fall below the relevant trigger.
* For the Difenoconazole metabolite CGA131013, the applicant proposes to use a worst case assumption that 100% of the parent compound is transformed into the metabolite CGA131013, which gives for example an initial concentration of 0.048 kg/ha for this metabolite by taking the difference in molecular weights into account (= 0.125 kg as/ha x 156/406.3).

Table 9.2-9: Tier 1 assessment of the acute and long-term/reproductive risk for birds due to the use of GLOB1911F in Oilseed rape (use group Oilseed rape) – metabolite CGA131013

Intended use	**Oilseed rape (winter and spring)**
Active substance/product	Metabolite CGA131013
Application rate (kg/ha)	2 × 0.048 kg a.s./ha (interval of 14 days)*
Reprod. toxicity (mg/kg bw/d)	~~9.75~~ 9.71
TER criterion	5

Crop scenario Growth stage	**Generic focal species**	**SV_m**	**MAF_m × TWA**	**DDD_m (mg/kg bw/d)**	**TER_{lt}**
Oilseed rape, BBCH 30-99	Small insectivorous bird "dunnock"	2.7	1.4 x 0.53	0.096	100.974
Oilseed rape, BBCH 10-29	Small omnivorous bird "lark"	10.9	1.4 x 0.53	0.388	25.012
Oilseed rape, BBCH 30-39	Small omnivorous bird "lark"	3.3	1.4 x 0.53	0.118	82.615
Oilseed rape, BBCH ≥40	Small omnivorous bird "lark"	2.7	1.4 x 0.53	0.096	100.974
Oilseed rape, BBCH 20-29	Medium herbivorous/granivorous bird "pigeon"	3.5	1.4 x 0.53	0.125	77.894
Oilseed rape, BBCH 30-39	Medium herbivorous/granivorous bird "pigeon"	1.1	1.4 x 0.53	0.039	247.846
Oilseed rape, BBCH ≥40	Medium herbivorous/granivorous bird "pigeon"	0.9	1.4 x 0.53	0.032	302.923
Oilseed rape, BBCH 20-29	Small insectivorous bird "wagtail"	2.8	1.4 x 0.53	0.100	97.368
Oilseed rape, BBCH 10-19	Large herbivorous bird "goose"	15.9	1.4 x 0.53	0.566	17.16
Oilseed rape, BBCH 10-19	Small insectivorous bird "wagtail"	5.9	1.4 x 0.53	0.210	46.2
Oilseed rape, BBCH 10-19	Medium herbivorous/ granivorous bird "pigeon"	22.7	1.4 x 0.53	0.81	11.99

SV: shortcut value; MAF: multiple application factor; TWA: time-weighted average factor; DDD: daily dietary dose; TER: toxicity to exposure ratio. TER values shown in bold fall below the relevant trigger.
* For the Difenoconazole metabolite CGA131013, the applicant proposes to use a worst case assumption that 100% of the parent compound is transformed into the metabolite CGA131013, which gives for example an initial concentration of 0.048 kg/ha for this metabolite by taking the difference in molecular weights into account (= 0.125 kg as/ha x 156/406.3).

Based on the Tier 1 reproductive risk assessment, the TER_{lt} value for Difenoconazole and metabolite CGA131013 is greater than the Annex VI triggers of 5 indicating that GLOB1911F presents no unacceptable long-term risk to birds following its application according the intended GAP. Therefore, further risk assessments are not required.

9.2.2.2 Higher-tier risk assessment

Not required. Acceptable risk at lower tier.

9.2.2.3 Drinking water exposure

When necessary, the assessment of the risk for birds due to uptake of contaminated drinking water is conducted for a small granivorous bird with a body weight of 15.3 g (*Carduelis cannabina*) and a drinking water uptake rate of 0.46 L/kg bw/d (*cf.* Appendix K of EFSA/2009/1438).

Leaf scenario

Since GLOB1911F is not intended to be applied on leafy vegetables forming heads or crop plants with comparable water collecting structures at principal growth stage 4 or later, the leaf scenario does not have to be considered.

Puddle scenario

Due to the characteristics of the exposure scenario in connection with the standard assumptions for water uptake by animals, no specific calculations of exposure and TER are necessary when the ratio of effective application rate (in g/ha) to relevant endpoint (in mg/kg bw/d) does not exceed 50 in the case of less sorptive substances (Koc < 500 L/kg) or 3000 in the case of more sorptive substances (Koc ≥ 500 L/kg).

With a K(f)oc of 3760 mL/g, Difenoconazole belongs to the group of more sorptive substances.

The application rate is calculated as follows and the results are given in the table 9.2.2.3-1.

$$AR_{eff} = AR \times MAF_m = AR \times \frac{1-e^{-nki}}{1-e^{-ki}}$$

Where
k = $\ln(2)/DT_{50}$ (rate constant)
n = number of applications
i = application interval (days)

As a worst-case assumption the effective application rate (g a.s./ha) is calculated for the intended use on Potato with 4 applications of 125 g a.s./ha and an interval of 10 days. This also covers the intended uses on Sugar beet and Oilseed rape.

Table 9.2.2.3-1 Effective application rate Difenoconazole

Crop	Active substance	Max application rate (AR) (g a.s./ha)	No. of applications	MAF_{mean} (worst-case)	AR_{eff} * (g a.s./ha)
Potato	Difenoconazole	125	4	3.85	481.25

* Effective application rate = application rate multiplied by MAF based on Soil DT_{50} difenoconazole = 265 days

Effective application rate (g/ha)	=	481.25			
Acute toxicity (mg/kg bw)	=	~~392~~ 349	quotient	=	~~1.23~~ 1.38
Reprod. toxicity (mg/kg bw/d)	=	9.71	quotient	=	49.56

The ratio of the effective application rate to the acute and long term toxicity endpoint is less than 3000 for Difenoconazole. Therefore it is considered that the risk is acceptable for acute/long term toxicity to birds from the uptake of contaminated drinking water and no further assessment is required.

9.2.2.4 Effects of secondary poisoning

The log P_{ow} of Difenoconazole amounts to 4.36 and thus does exceeds the trigger value of 3. A risk assessment for effects due to secondary poisoning is required.

Risk assessment for earthworm-eating birds via secondary poisoning

According to EFSA/2009/1438, the risk for vermivorous birds is assessed for a bird of 100 g body weight with a daily food consumption of 104.6 g. Bioaccumulation in earthworms is estimated based on predicted concentrations in soil.
The highest 21d TWA PEC_{soil} resulting from the critical intended uses of GLOB1911F is taken from Section 8 (Environmental Fate), Chapter 8.7.2. The assessment with this worst-case scenario also covers the risk for birds from all other intended uses.

Table 9.2-10: Assessment of the risk for earthworm-eating birds due to exposure to Difenoconazole bioaccumulation in earthworms (secondary poisoning) for the intended use in Potato, Sugar beet and Oilseed rape

Parameter	Difenoconazole	comments
PEC_{soil} (twa = 21 d) (mg/kg soil)	0.1911	dRR Part B8, Chapter 8.7.2, Table 8.7-5. Highest PEC_{soil} (twa = 21 d) (Winter OSR with crop inerception 40/40)
log P_{ow} / P_{ow}	4.36/ 22909	EFSA, 2011
Koc	2943	Geometric mean (n = 8)
foc	0.02	Default
BCF_{worm}	4.68	$BCF_{worm/soil} = (PEC_{worm,ww}/PEC_{soil,dw})$ $= (0.84 + 0.012 \times P_{ow}) / foc \times Koc$
PEC_{worm}	0.894	$PEC_{worm} = PEC_{soil} \times BCF_{worm/soil}$
Daily dietary dose (mg/kg bw/d)	0.939	$DDD = PEC_{worm} \times 1.05$
NOEL (mg/kg bw/d)	9.71	EFSA, 2011
TER_{lt}	10.34	TER criterion = 5

TER values shown in bold fall below the relevant trigger.

The TERlt value is greater than the Annex VI trigger of 5 for the earthworm-eating birds, indicating that Difenoconazole poses low long-term risk to these birds following application of GLOB1911F according to the intended GAP.

Risk assessment for fish-eating birds via secondary poisoning

According to EFSA/2009/1438, the risk for piscivorous birds is assessed for a bird of 1000 g body weight with a daily food consumption of 159 g. Bioaccumulation in fish is estimated based on predicted concentrations in surface water of Difenoconazole in water.
The highest 21d TWA PEC_{SW} resulting from the critical intended uses of GLOB1911F is taken from Section 8 (Environmental Fate), Chapter 8.9.2. The assessment with this worst-case scenario also covers the risk for birds from all other intended uses.

Table 9.2-11: Assessment of the risk for fish-eating birds due to exposure to Difenoconazole via bioaccumulation in fish (secondary poisoning) for the intended use in Potato, Sugar beet and Oilseed rape

Parameter	Difenoconazole	comments
PEC_{sw} (twa = 21 d) (mg/L)	0.0006031	dRR Part B8, Chapter 8.9.2, Table 8.9-6 (highest 21 d- $PEC_{sw,twa}$ from the STEP 3, D2 scenario, winter OSR)
BCF_{fish}	330	EFSA, 2011
BMF	/	biomagnification factor (relevant for BCF ≥ 2000)
PEC_{fish}	0.199023	$PEC_{fish} = PEC_{water} \times BCF_{fish}$
Daily dietary dose (mg/kg bw/d)	0.031645	$DDD = PEC_{fish} \times 0.159$
NOEL (mg/kg bw/d)	9.71	EFSA, 2011
TER_{lt}	306.84	TER criterion = 5

TER values shown in bold fall below the relevant trigger.

The TERlt value is greater than the Annex VI trigger of 5 for the fish-eating birds, indicating that Difenoconazole poses low long-term risk to these birds following application of GLOB1911F according to the intended GAP.

9.2.2.5 Biomagnification in terrestrial food chains

The results of the ADME studies indicate that Difenoconazole have a low bioaccumulation potential. Difenoconazole is extensively metabolised and completely eliminated within 7 days. Thus there will be a low secondary exposure and bioaccumulation of Difenoconazole, and an acceptable risk to predatory birds is expected following the proposed use of GLOB1911F.

9.2.3 Risk assessment for baits, pellets, granules, prills or treated seed

Not relevant.

9.2.4 Overall conclusions

The risk assessments for birds indicated that the TER_a and TER_{lt} values are greater than the trigger of 10 or 5 respectively, indicating that the use of GLOB1911F in Potato, Sugar beet and Oilseed rape according to the proposed GAP poses an acceptable acute and long-term risk to birds.

The ratio of the effective application rate and acute and long-term endpoints for Difenoconazole (1.23 and 49.56 respectively) does not exceed the threshold value of 3000 as given by EFSA/2009/1438 for more sorptive substances (Koc ≥ 500 L/kg). Therefore, it is considered that there is a low risk of acute/long-term toxicity to birds from the uptake of contaminated drinking water and no further assessment is required.

Difenoconazole has a log P_{OW} value of 4.36, hence the risk from secondary poisoning was considered. The long-term TERs for secondary poisoning via earthworms and fish based on 21 days TWA PEC_{soil} and 21 days TWA PEC_{sw} values were all above the Annex VI trigger of 5, indicating acceptable risks.

9.3 Effects on terrestrial vertebrates other than birds (KCP 10.1.2)

zRMS Comments:	The used endpoints for acute and long-term risk were agreed at the EU level. The proposed use of GLOB1911F was taken into consideration. The active substance and its metabolite CGA 131013 were considered. **Difenoconazole**. The screening step and first tier assessment of the acute and long-term risk for mammals respectively, confirmed an acceptable risk for formulation proposed use. At Tier 1 the missed crop scenario for oilseed rape considering the BBCH19 was added by evaluator, as in GAP table the growth stage starts from 19. **Metabolite CGA131013**. The screening step assessment of the acute and long-term risk for mammals confirmed an acceptable risk for formulation proposed use. The risk for mammals via drinking water is acceptable. The risk for earthworm-eating and fish-eating mammals is also acceptable. Even if max PECs ini = 0.1964 mg/kg soil is taken into consideration as the worst case, the risk is acceptable (TERlt = 14.70). Similar, if the max PECsw ini in Step 3 was used in risk assessment (R1 stream scenario, potatoes), the TERlt of 260 confirms the acceptable risk for fish-eating mammals. The risk to mammals following application of GLOB1911F in accordance with the proposed use in potatoes, winter and spring OSR is acceptable. In case of sugar beet, the safe use was confirmed for BBCH ≥ 40; for BBCH 10-39 the risk is acceptable if application rate of difenoconazole is of 95 g a.s./ha.

9.3.1 Toxicity data

Mammalian toxicity studies have been carried out with Difenoconazole and its relevant metabolite CGA131013. Full details of these studies are provided in the respective EU DAR and related documents.

Effects on mammals of GLOB1911F were not evaluated as part of the EU assessment of Difenoconazole. However, further data on GLOB1911F are not relevant as active substance data on toxicity to terrestrial vertebrates other than birds are used and additional formulation data are not considered essential. Risk assessments for GLOB1911F with the proposed use pattern are provided here and are considered adequate.
The EU agreed endpoints for the mammalian toxicity studies are summarized in tables 9.3-1 below.

Table 9.3-1: Endpoints and effect values relevant for the risk assessment for mammals

Species	Substance	Exposure System	Results	Reference
Rat	Difenoconazole	Oral 1 d Acute	LD_{50} > 1453 mg/kg bw	EFSA, 2011 SE, 2006
	CGA131013	Oral 1 d Acute	LD_{50} > 5000 mg/kg bw	EFSA, 2011 SE, 2006

Species	Substance	Exposure System	Results	Reference
	Difenoconazole	Dietary Reproductive toxicity Two-generation study	NOAEL = 17.3 mg/kg bw/d	EFSA, 2011 SE, 2006
	CGA131013	Oral Developmental toxicity	NOAEL = 100 mg/kg bw/d	EFSA, 2011 SE, 2006

9.3.1.1 Justification for new endpoints

EU agreed endpoints were used in the risk assessment. No deviations were made.

9.3.2 Risk assessment for spray applications

The risk assessment is based on the methods presented in the Guidance Document on Risk Assessment for Mammals and Mammals on request from EFSA (EFSA Journal 2009; 7(12): 1438; hereafter referred to as EFSA/2009/1438).
The risk assessment is performed for the intended uses of GLOB1911F on Potato, Sugar beet and Oilseed rape (winter and spring).

9.3.2.1 First-tier assessment (screening/generic focal species)

Screening step

Exposure to indicator species was estimated according to EFSA/2009/1438 in order to provide a worst-case scenario. The appropriate exposure scenarios are deemed to be 'Oilseed rape', 'Sugar beet' and 'Potato'. The relevant indicator species for all mentioned crop groups at the screening step is that of a small herbivorous mammal with short-cut values of 118.4 and 48.3 for acute and long-term assessments respectively.

The DDD (daily dietary dose) for multiple applications was calculated by multiplying the application rate (kg/ha) by the short-cut value and the MAF (multiple application factor to account for multiple applications). On top of this, for the long term exposure, the result was multiplied by TWA (factor to account for the time weighted average).
This DDD at the screening step is calculated for the intended use on Potato with maximum 4 applications of 0.125 kg a.s./ha with 10 days interval and covers all other intended uses on Sugar beet and Oilseed rape.
Following equations are used:

DDD_{acute} = Application rate (kg a.s./ha) × short-cut value × MAF
DDD_{repro} = Application rate (kg a.s./ha) × short-cut value × MAF × TWA
Where:

- the short-cut value is given by the guidance document
- MAF is the Multiple Application Factor. As worst-case scenario, an MAF considering 4 applications and 10d interval is used (intended use on Potato).

For the acute risk assessment the MAF_{90} (multiple application factor for 90th percentile residue data) should be used and equals to 1.5 (4 applications, 10d interval)
For the reproductive risk assessment the MAF_m (multiple application factor assuming mean residue data) should be used and equals to 1.9 (4 applications, 10d interval)

- The term TWA is the time-weighted-average factor. This was used to calculate time-weighted average (TWA) residues on leafy crops, which take into account the degradation of the active substances over time. TWA residues were used as an estimate of long-term exposure only, since it is considered that the use of maximum residues provides an unrealistically extreme worst-case estimate of long-term exposure. As indicated in the Guidance Document, the effects are assumed to be caused by long term exposure by default and thus the TWA of 0.53 applies.

The acute risk to mammals of Difenoconazole was assessed by calculating toxicity exposure ratios (TER_A) using the following equation:

$$TER_A = \frac{LD_{50}\ (mg/kg\ bw/day)}{Acute\ DDD\ (mg/kg\ bw/day)}$$

Long-term toxicity exposure ratios (TER_{LT}) for Difenoconazole were calculated using the following equation:

$$TER_{LT} = \frac{NOEL\ (mg/kg\ bw/day)}{Long\text{-}term\ DDD\ (mg/kg\ bw/day)}$$

The results of the acute and reproductive screening step risk assessments for Difenoconazole and its metabolite CGA131013 are summarised in the following tables.

Table 9.3-2: Screening step assessment of the acute and long-term/reproductive risk for mammals due to the use of GLOB1911F in Potato (use group Potato) - Difenoconazole

Intended use	Potato (covers Sugar beet and Oilseed rape)				
Active substance/product	Difenoconazole				
Application rate (kg/ha)	4 × 0.125 kg a.s./ha (interval of 10 days)				
Acute toxicity (mg/kg bw)	>1453				
TER criterion	10				
Crop scenario Growth stage	**Indicator species**	**SV_{90}**	**MAF_{90}**	**DDD_{90} (mg/kg bw/d)**	**TER_a**
Potato (covers Sugar beet and Oilseed rape) Screening step	Small herbivorous mammal	118.4	1.5	22.20	65.45
Reprod. toxicity (mg/kg bw/d)	17.3				
TER criterion	5				
Crop scenario Growth stage	**Indicator species**	**SV_m**	**MAF_m × TWA**	**DDD_m (mg/kg bw/d)**	**TER_{lt}**
Potato (covers Sugar beet and Oilseed rape) Screening step	Small herbivorous mammal	48.3	1.9 x 0.53	6.08	**2.845**

SV: shortcut value; MAF: multiple application factor; TWA: time-weighted average factor; DDD: daily dietary dose; TER: toxicity to exposure ratio. TER values shown in bold fall below the relevant trigger.

Table 9.3-3: Screening step assessment of the acute and long-term/reproductive risk for mammals due to the use of GLOB1911F in Potato (use group Potato) – metabolite CGA131013

Intended use	Potato (covers Sugar beet and Oilseed rape)				
Active substance/product	Metabolite CGA131013				
Application rate (kg/ha)	4 × 0.048 kg a.s./ha (interval of 10 days)*				
Acute toxicity (mg/kg bw)	>5000				
TER criterion	10				
Crop scenario Growth stage	**Indicator species**	**SV_{90}**	**MAF_{90}**	**DDD_{90} (mg/kg bw/d)**	**TER_a**
Potato (covers Sugar beet and Oilseed rape) Screening step	Small herbivorous mammal	118.4	1.5	8.53	586.17
Reprod. toxicity (mg/kg bw/d)	100				
TER criterion	5				
Crop scenario Growth stage	**Indicator species**	**SV_m**	**MAF_m × TWA**	**DDD_m (mg/kg bw/d)**	**TER_{lt}**
Potato (covers Sugar beet and Oilseed rape) Screening step	Small herbivorous mammal	48.3	1.9 x 0.53	2.33	42.92

SV: shortcut value; MAF: multiple application factor; TWA: time-weighted average factor; DDD: daily dietary dose; TER: toxicity to exposure ratio. TER values shown in bold fall below the relevant trigger.
* For the Difenoconazole metabolite CGA131013, the applicant proposes to use a worst case assumption that 100% of the parent compound is transformed into the metabolite CGA131013, which gives for example an initial concentration of 0.048 kg/ha for this metabolite by taking the difference in molecular weights into account (= 0.125 kg as/ha x 156/406.3).

Based on the screening step, the TER_a value for Difenoconazole and metabolite CGA131013 is greater than the Annex VI triggers of 10 indicating that GLOB1911F presents low acute risk to mammals following its application according the intended GAP. Therefore, further risk assessments are not required.

Based on the screening step, the TER_{lt} value for Difenoconazole is lower than the Annex VI triggers of 5 indicating that the reproductive risk to mammals is not acceptable. Therefore, first-tier reproductive risk assessment is performed. For the metabolite CGA131013, TER_{lt} value is greater than the Annex VI triggers of 5, indicating acceptable risk for this metabolite.

Tier 1 Reproductive Risk assessment

Since the generic focal species and corresponding shortcut values are dependent on the crop, tier 1 reproductive risk assessment are performed for all intended uses on Potato, Sugar beet and Oilseed rape. Please make reference to the critical GAP shown in Table 9.1-1.

Same equations for DDD_m and TER_{lt} as for the screening step are used.

Table 9.3-4: Tier 1 assessment of the acute and long-term/reproductive risk for mammals due to the use of GLOB1911F in Potato (use group Potato) - Difenoconazole

Intended use	**Potato**
Active substance/product	Difenoconazole
Application rate (kg/ha)	4 × 0.125 kg a.s./ha (interval of 10 days)

Reprod. toxicity (mg/kg bw/d)	17.3				
TER criterion	5				
Crop scenario Growth stage	**Generic focal species**	**SV_m**	**MAF_m × TWA**	**DDD_m (mg/kg bw/d)**	**TER_{lt}**
Potato, BBCH ≥20	Small insectivorous mammal “shrew”	1.9	1.9 x 0.53	0.239	72.336
Potato, BBCH ≥40	Small herbivorous mammal “vole”	21.7	1.9 x 0.53	2.731	6.334
Potato, BBCH 10-40	Large herbivorous mammal “lagomorph”	14.3	1.9 x 0.53	1.800	9.611
Potato, BBCH ≥40	Large herbivorous mammal “lagomorph”	4.3	1.9 x 0.53	0.541	31.962
Potato, BBCH ≥40	Small omnivorous mammal “mouse”	2.3	1.9 x 0.53	0.290	59.756

SV: shortcut value; MAF: multiple application factor; TWA: time-weighted average factor; DDD: daily dietary dose; TER: toxicity to exposure ratio. TER values shown in bold fall below the relevant trigger.

Table 9.3-5: Tier 1 assessment of the acute and long-term/reproductive risk for mammals due to the use of GLOB1911F in Sugar beet (use group Sugar beet) - Difenoconazole

Intended use	**Sugar beet**				
Active substance/product	Difenoconazole				
Application rate (kg/ha)	2 × 0.125 kg a.s./ha (interval of 14 days)				
Reprod. toxicity (mg/kg bw/d)	17.3				
TER criterion	5				
Crop scenario Growth stage	**Generic focal species**	**SV_m**	**MAF_m × TWA**	**DDD_m (mg/kg bw/d)**	**TER_{lt}**
Sugar beet, BBCH ≥20	Small insectivorous mammal “shrew”	1.9	1.4 x 0.53	0.176	98.170
Sugar beet, BBCH ≥40	Small herbivorous mammal “vole”	18.1	1.4 x 0.53	1.679	10.305
Sugar beet, BBCH ≥40	Large herbivorous mammal “lagomorph”	3.6	1.4 x 0.53	0.334	51.812
Sugar beet, BBCH ≥40	Small omnivorous mammal “ mouse”	1.9	1.4 x 0.53	0.176	98.170
Sugar beet, BBCH 10-39	Large herbivorous mammal “lagomorph”	14.3	1.4 x 0.53	1.33	13.01
Sugar beet, BBCH 10-39	Small omnivorous mammal “mouse”	7.8	1.4 x 0.53	0.72	24.03

SV: shortcut value; MAF: multiple application factor; TWA: time-weighted average factor; DDD: daily dietary dose; TER: toxicity to exposure ratio. TER values shown in bold fall below the relevant trigger.

Table 9.3-6: Tier 1 assessment of the acute and long-term/reproductive risk for mammals due to the use of GLOB1911F in Oilseed rape (use group Oilseed rape) – Difenoconazole

Intended use	**Oilseed rape (winter and spring)**
Active substance/product	Difenoconazole
Application rate (kg/ha)	2 × 0.125 kg a.s./ha (interval of 14 days)
Reprod. toxicity (mg/kg bw/d)	17.3
TER criterion	5

Crop scenario Growth stage	**Generic focal species**	**SV_m**	**MAF_m × TWA**	**DDD_m (mg/kg bw/d)**	**TER_{lt}**
Oilseed rape, BBCH ≥20	Small insectivorous mammal "shrew"	1.9	1.4 x 0.53	0.176	98.170
Oilseed rape, BBCH ≥40	Small herbivorous mammal "vole"	18.1	1.4 x 0.53	1.679	10.305
Oilseed rape, all season	Large herbivorous mammal "lagomorph"	14.3	1.4 x 0.53	1.326	13.044
Oilseed rape, BBCH 10-29	Small omnivorous mammal " mouse"	7.8	1.4 x 0.53	0.723	23.913
Oilseed rape, BBCH 30-39	Small omnivorous mammal " mouse"	2.3	1.4 x 0.53	0.213	81.097
Oilseed rape, BBCH ≥40	Small omnivorous mammal " mouse"	1.9	1.4 x 0.53	0.176	98.170
Oilseed rape, BBCH 10-19	Small insectivorous mammal "shrew	4.2	1.4 x 0.53	0.390	44.36

SV: shortcut value; MAF: multiple application factor; TWA: time-weighted average factor; DDD: daily dietary dose; TER: toxicity to exposure ratio. TER values shown in bold fall below the relevant trigger.

Based on the Tier 1 reproductive risk assessment, the TER_{lt} value for Difenoconazole is greater than the Annex VI triggers of 5 indicating that GLOB1911F presents no unacceptable long-term risk to mammals following its application according the intended GAP. Therefore, further risk assessments are not required.

9.3.2.2 Higher-tier risk assessment

Not required as the risk was acceptable at a lower tier.

9.3.2.3 Drinking water exposure

When necessary, the assessment of the risk for mammals due to uptake of contaminated drinking water is conducted for a small omnivorous mammal with a body weight of 21.7 g (*Apodemus sylvaticus*) and a drinking water uptake rate of 0.24 L/kg bw/d (*cf.* Appendix K of EFSA/2009/1438).

Puddle scenario

Due to the characteristics of the exposure scenario in connection with the standard assumptions for water uptake by animals, no specific calculations of exposure and TER are necessary when the ratio of effective application rate (in g/ha) to relevant endpoint (in mg/kg bw/d) does not exceed 50 in the case of less

sorptive substances (Koc < 500 L/kg) or 3000 in the case of more sorptive substances (Koc ≥ 500 L/kg).

With a K(f)oc of 3760 mL/g, Difenoconazole belongs to the group of more sorptive substances.

The application rate is calculated as follows and the results are given in the table 9.3.2.3-1.

$$AR_{eff} = AR \times MAF_m = AR \times \frac{1-e^{-nki}}{1-e^{-ki}}$$

Where
k = $\ln(2)/DT_{50}$ (rate constant)
n = number of applications
i = application interval (days)

As a worst-case assumption the effective application rate (g a.s./ha) is calculated for the intended use on Potato with 4 applications of 125 g a.s./ha and an interval of 10 days. This also covers the intended uses on Sugar beet and Oilseed rape.

Table 9.3.2.3-1 Effective application rate Difenoconazole

Crop	Active substance	Max application rate (AR) (g a.s./ha)	No. of applications	MAF_{mean} (worst-case)	AR_{eff} * (g a.s./ha)
Potato	Difenoconazole	125	4	3.85	481.25

* Effective application rate = application rate multiplied by MAF based on Soil DT_{50} difenoconazole = 265 days

Effective application rate (g/ha)	=	481.25		
Acute toxicity (mg/kg bw)	=	1453	quotient =	0.33
Reprod. toxicity (mg/kg bw/d)	=	17.3	quotient =	27.82

The ratio of the effective application rate to the acute and long term toxicity endpoint is less than 3000 for Difenoconazole. Therefore it is considered that the risk is acceptable for acute/long term toxicity to mammals from the uptake of contaminated drinking water and no further assessment is required.

9.3.2.4 Effects of secondary poisoning

The log P_{ow} of Difenoconazole amounts to 4.36 and thus does exceeds the trigger value of 3. A risk assessment for effects due to secondary poisoning is required.

Risk assessment for earthworm-eating mammals via secondary poisoning

According to EFSA/2009/1438, the risk for vermivorous mammals is assessed for a small mammal of 10 g body weight with a daily food consumption of 12.8 g. Bioaccumulation in earthworms is estimated based on measured/predicted concentrations in soil.
The highest 21d TWA PEC_{soil} resulting from the critical intended uses of GLOB1911F is taken from Section 8 (Environmental Fate), Chapter 8.7.2. The assessment with this worst-case scenario also covers the risk for birds from all other intended uses.

Table 9.3-7: Assessment of the risk for earthworm-eating mammals due to exposure to Difenoconazole via bioaccumulation in earthworms (secondary poisoning) for the intended use in Potato, Sugar beet and Oilseed rape

Parameter	Difenoconazole	comments
PEC_{soil} (twa = 21 d) (mg/kg soil)	0.1911	dRR Part B8, Chapter 8.7.2, Table 8.7-5.

Parameter	Difenoconazole	comments
		Highest PEC_{soil} (twa = 21 d) (Winter OSR with crop inerception 40/40)
log P_{ow} / P_{ow}	4.36/ 22909	EFSA, 2011
Koc	2943	Geometric mean (n = 8)
foc	0.02	Default
BCF_{worm}	4.68	$BCF_{worm/soil} = (PEC_{worm,ww}/PEC_{soil,dw})$ $= (0.84 + 0.012 \times P_{ow}) / foc \times Koc$
PEC_{worm}	0.894	$PEC_{worm} = PEC_{soil} \times BCF_{worm/soil}$
Daily dietary dose (mg/kg bw/d)	1.144332	$DDD = PEC_{worm} \times 1.28$
NOEL (mg/kg bw/d)	17.3	EFSA, 2011
TER_{lt}	15.12	TER criterion = 5

TER values shown in bold fall below the relevant trigger.

The TERlt value is greater than the Annex VI trigger of 5 for the earthworm-eating mammals, indicating that Difenoconazole poses low long-term risk to these mammals following application of GLOB1911F according to the intended GAP.

Risk assessment for fish-eating mammals via secondary poisoning

According to EFSA/2009/1438, the risk for piscivorous mammals is assessed for a mammal of 3000 g body weight with a daily food consumption of 425 g. Bioaccumulation in fish is estimated based on predicted concentrations in surface water of Difenoconazole in water.
The highest 21d TWA PEC_{SW} resulting from the critical intended uses of GLOB1911F is taken from Section 8 (Environmental Fate), Chapter 8.9.2. The assessment with this worst-case scenario also covers the risk for birds from all other intended uses.

Table 9.3-8: Assessment of the risk for fish-eating mammals due to exposure to Difenoconazole via bioaccumulation in fish (secondary poisoning) for the intended use in Potato, Sugar beet and Oilseed rape

Parameter	Difenoconazole	comments
PEC_{sw} (twa = 21 d) (mg/L)	0.0006031	dRR Part B8, Chapter 8.9.2, Table 8.9-6 (highest 21 d- $PEC_{sw,twa}$ from the STEP 3, D2 scenario, winter OSR)
BCF_{fish}	330	EFSA, 2011
BMF	/	biomagnification factor (relevant for BCF ≥ 2000)
PEC_{fish}	0.199023	$PEC_{fish} = PEC_{water} \times BCF_{fish}$
Daily dietary dose (mg/kg bw/d)	0.028261	$DDD = PEC_{fish} \times 0.142$
NOEL (mg/kg bw/d)	17.3	EFSA, 2011
TER_{lt}	612.15	TER criterion = 5

TER values shown in bold fall below the relevant trigger.

The TERlt value is greater than the Annex VI trigger of 5 for the fish-eating mammals, indicating that Difenoconazole poses low long-term risk to these mammals following application of GLOB1911F according to the intended GAP.

9.3.2.5 Biomagnification in terrestrial food chains

The results of the ADME studies indicate that Difenoconazole have a low bioaccumulation potential. Difenoconazole is extensively metabolised and completely eliminated within 7 days. Thus there will be a low secondary exposure and bioaccumulation of Difenoconazole, and an acceptable risk to predatory mammals is expected following the proposed use of GLOB1911F.

9.3.3 Risk assessment for baits, pellets, granules, prills or treated seed

Not relevant.

9.3.4 Overall conclusions

The risk assessments for mammals indicated that the TER_a and TER_{lt} values are greater than the trigger of 10 or 5 respectively, indicating that the use of GLOB1911F in Potato, Sugar beet and Oilseed rape according to the proposed GAP poses an acceptable acute and long-term risk to mammals.

The ratio of the effective application rate and acute and long-term endpoints for Difenoconazole (0.33 and 27.82, respectively) does not exceed the threshold value of 3000 as given by EFSA/2009/1438 for more sorptive substances (Koc ≥ 500 L/kg). Therefore, there is low risk of acute/long term toxicity to mammals from the uptake of contaminated drinking water and no further assessment is required.

Difenoconazole has a log P_{OW} value of 4.36, hence the risk from secondary poisoning was considered. The long-term TERs for secondary poisoning via earthworms and fish based on 21 days TWA PEC_{soil} and PEC_{sw} values were all above the Annex VI trigger of 5, indicating acceptable risks.

9.4 Effects on other terrestrial vertebrate wildlife (reptiles and amphibians) (KCP 10.1.3)

No data available.

9.5 Effects on aquatic organisms (KCP 10.2)

Evaluation Comments:	New studies were submitted and evaluated in Appendix 2. New endpoints for formulation GLOB1911F were used in risk assessment for aquatic organisms. The application pattern proposed in GAP table was taken into consideration: • potatoes at 4 x 125 g a.s./ha, • sugar beets at 2 x 125 g a.s./ha, • winter OSR at 2 x 125 g a.s./ha, • spring OSR at 2 x 125 g a.s./ha. **Difenoconazole**. The submitted endpoints agreed at the EU level and based on new studies (confirmatory data) were taken into consideration in risk assessment. For fish acute risk assessment, the agreed endpoint LC_{50} = 0.65 mg a.s./L was added and used.

For risk assessment the PECsw and PECsed values evaluated in Section 8 were taken into consideration.
Due to potential difenoconazole accumulation in sediment, the PECsed accum were considered in risk assessment.
The corrected PECsw and PEC/RAC ratio for potatoes, winter oilseed rape, spring oilseed rape were presented in Tables 9.5-3 to 9.5-30. Further changes in tables presented by Applicant were improved by evaluator.

The proposed mitigation measures proposed in summary table was corrected.
The relevant scenarios for zRMS and cMS were taken into consideration (D3, D4 and R1).

The risk for aquatic organisms is acceptable if mitigation measure of 10 m VBS and 10 NSS are implemented.

The proper mitigation measures should be considered at MS level in accordance with the national requirements.

Metabolites of Difenoconazole.
The metabolites CGA205375 and CGA71019 were taken into consideration. The risk envelope approach was taken into consideration. The submitted risk assessment is based on Step 1 PECsw i PECsed values for potatoes at multiple application reported in Section 8.

The risk assessment for metabolites CGA205375 and CGA71019 was accepted.
The metabolites pose an acceptable risk.

Formulation GLOB1911F.
Based on the actue toxicity studies performed with the active substance, algae are the most sensitive species (E_bC_{50}/ E_rC_{50} = 0.032 mg a.s./L) compared to fish (LC_{50} = 1.1 mg a.s./L) and aquatic invertebrates (EC_{50} = 0.15 mg as/L) and endpoints differ with a factor of more than 10 (in bold). Therefore it is not required to perform toxicity studies with the formulation GLOB1911F on fish and aquatic invertebrates and a study on the most sensitive group (algae) is sufficient. Since GLOB1911F is not a herbicide or has no herbicidal activity, a study on macrophytes is not required.

The following studies were performed on the active substance:

Species	Substance	Exposure System	Results	Reference
Acute toxicity to fish				
Oncorhynchus mykiss	Difenoconazole	96 h, f	**LC_{50} = 1.1 mg a.s./L**	EFSA, 2011
Chronic toxicity to fish				
Pimephales promelas	Difenoconazole	34d, f	NOEC = 0.0076 mg as/L	EFSA, 2011
Pimephales promelas	Difenoconazole	34d, f	NOEC = 0.0036 mg as/L	Confirmatory data
Acute toxicity to aquatic invertebrates				
Daphnia magna	Difenoconazole	48 h, s	EC_{50} = 0.77 mg a.s./L	EFSA, 2011
Mysidiopsis bahia	Difenoconazole	96 h, f	**EC_{50} = 0.15 mg as/L**	EFSA, 2011

Eastern oyster *Crassostrea virginica*	Difenoconazole	96 h	EC_{50} >0.3 mg/L	EFSA, 2011
Chronic toxicity to aquatic invertebrates				
Daphnia magna	Difenoconazole	21 d, f	NOEC = 0.0056 mg a.s./L (mm)	EFSA, 2011
Chronic toxicity to aquatic insects				
Chironomus riparius	Difenoconazole	28 d, s	NOEC = 0.015 mg a.s./L (0.0525 mg/kg sediment – estimated)	EFSA, 2011
Chironomus riparius	Difenoconazole	28 d, s	NOEC = 8.2 mg/kg dry sediment(mm) (0.018 mg as/L) EC_{10} = 12 mg/kg dry sediment(mm)	Eckenstein, H., 2014
Toxicity to green algae				
Scenedesmus subspicatus	Difenoconazole	72 h, s	**E_bC_{50}/ E_rC_{50} = 0.032 mg a.s./L**	EFSA, 2011
Toxicity to aquatic plants				
No data available, not necessary for a fungicide				
Higher-tier studies (micro- or mesocosm studies)				
No data available, not necessary.				

The proposed mitigation measures considering the drift exposure was assessed by evaluator considering the SWASH drift calculator. The PECsw = 1.8552 µg/L as the worst case (0.25 L formulation/ha) was considered in formulation risk assessment.

No additional mitigation measure is required.

9.5.1 Toxicity data

Studies on the toxicity to aquatic organisms have been carried out with Difenoconazole and its relevant metabolites. Full details of these studies are provided in the respective EU DAR and related documents.

Effects on aquatic organisms of GLOB1911F were not evaluated as part of the EU assessment of Difenoconazole. New data submitted with this application are listed in Appendix 1 and summarised in Appendix 2.

The selection of studies and endpoints for the risk assessment deviates from the results of the EU review process. Justifications are provided below.

Table 9.5-1: Endpoints and effect values relevant for the risk assessment for aquatic organisms – Difenoconazole and relevant metabolites

Species	Substance	Exposure System	Results	Reference
Acute toxicity to fish				
Oncorhynchus mykiss	Difenoconazole	96 h, f	**LC_{50} = 1.1 mg a.s./L**	EFSA, 2011
Oncorhynchus mykiss	Difenoconazole [1)]	96 h, s	**LC_{50} = 0.65 mg a.s./L** $_{mm}$	EFSA Journal 2011
Oncorhynchus mykiss	CGA71019	96 h, s	LC_{50} = 498 mg/L	EFSA, 2011
Oncorhynchus mykiss	CGA205375	96 h, s	LC_{50} = 0.74 mg/L	EFSA, 2011
Chronic toxicity to fish				
Pimephales promelas	Difenoconazole	34d, f	NOEC = 0.0076 mg as/L	EFSA, 2011
Pimephales promelas	Difenoconazole	34d, f	**NOEC = 0.0036 mg as/L**	Confirmatory data
Oncorhynchus mykiss	CGA71019	28d, s	NOEC = 3.2 mg/L	EFSA, 2011
Acute toxicity to aquatic invertebrates				
Daphnia magna	Difenoconazole	48 h, s	EC_{50} = 0.77 mg a.s./L	EFSA, 2011
Mysidiopsis bahia	Difenoconazole	96 h, f	**EC_{50} = 0.15 mg as/L**	EFSA, 2011
Eastern oyster *Crassostrea virginica*	Difenoconazole	96 h	EC_{50} >0.3 mg/L	EFSA, 2011
Daphnia magna	CGA71019	48 h, s	EC_{50} > 100 mg/L	EFSA, 2011
Daphnia magna	CGA205375	48 h, s	EC_{50} = 1.4 mg/L	EFSA, 2011
Chronic toxicity to aquatic invertebrates				
Daphnia magna	Difenoconazole	21 d, f	**NOEC = 0.0056 mg a.s./L** $_{mm}$	EFSA, 2011
~~Mysid shrimp *Americamysis bahia*~~	~~Difenoconazole~~	~~28 d~~	~~**NOEC = 0.0046 mg a.s./L** $_{mm}$~~	~~EFSA, 2011~~
Chronic toxicity to aquatic insects				
Chironomus riparius	Difenoconazole	28 d, s	NOEC = 0.015 mg a.s./L (0.0525 mg/kg sediment – estimated)	EFSA, 2011
Chironomus riparius	Difenoconazole	28 d, s	**NOEC = 8.2 mg/kg dry sediment**$_{(mm)}$ (0.018 mg as/L) EC_{10} = 12 mg/kg dry sediment$_{(mm)}$	Eckenstein, H., 2014
Chironomus riparius	CGA205375	28 d, s	$NOEC_{water}$ = 0.4 mg/L $NOEC_{sediment}$ = 10 mg/kg dw	EFSA, 2011
Toxicity to green algae				
Scenedesmus subspicatus	Difenoconazole	72 h, s	**E_bC_{50}/ E_rC_{50} = 0.032 mg a.s./L**	EFSA, 2011
Selenastrum capricornutum	CGA71019	96 h, s	E_bC_{50} = 8.2 mg/L	EFSA, 2011

Species	Substance	Exposure System	Results	Reference
			E_rC_{50} > 31 mg as/L	
Selenastrum capricornutum	CGA205375	72 h, s	E_bC_{50} = 1.24 mg/L E_rC_{50} = 3.1 mg as/L	EFSA, 2011
Toxicity to aquatic plants				
No data available, not necessary for a fungicide				
Higher-tier studies (micro- or mesocosm studies)				
No data available, not necessary.				

s: static; ss: semi-static; f: flow-through; nom: based on nominal concentrations; mm: based on mean measured concentrations; im: based on initial measured concentrations; 1) based on study with SCORE 250 EC

For Difenoconazole, the 34-day NOEC from the early life stage toxicity test with Difenoconazole in Fathead minnow was revised by EFSA following the consultation with Member States, the applicant and EFSA on the pesticide risk assessment of confirmatory data. It was there agreed to use the NOEC of 3.6 µg/L as there was an effect on male body length and possible endocrine disruption can't be excluded.

Table 9.5-2: Endpoints and effect values relevant for the risk assessment for aquatic organisms – GLOB1911F

Species	Substance	Exposure System	Results	Reference
Pseudokirchneriella subcapitata	GLOB1911F	72 h, s	E_rC_{50} = 6.46 mg product/L $_{nom}$ (E_rC_{50} = 2.92 mg a.s./L $_{nom}$) E_yC_{50} = 3.17 mg product/L $_{nom}$ (E_yC_{50} = 1.43 mg a.s./L $_{nom}$)	Juckeland, D., 2020a 20 48 AAL 0002
Higher-tier studies (micro- or mesocosm studies)				

s: static; ss: semi-static; f: flow-through; nom: based on nominal concentrations; mm: based on mean measured concentrations

9.5.1.1 Justification for new endpoints

Effects on aquatic organisms of the formulation GLOB1911F were not evaluated as part of the EU assessment of Difenoconazole. Therefore new acute toxicity studies with GLOB1911F were performed on the algae *Pseudokirchneriella subcapitata.*
Based on studies performed with the active substance, algae are the most sensitive species compared to fish and aquatic invertebrates and endpoints differ with a factor of more than 10. Therefore it is not required to perform studies with the formulation GLOB1911F on fish and aquatic invertebrates and a study on the most sensitive group (algae) is sufficient. Since GLOB1911F is not a herbicide or has no herbicidal activity, a study on macrophytes is not required.

A *Chironomus riparius* study was evaluated and accepted during the Annex I inclusion of Difenoconazole (EFSA, 2011). As no measurements of sediment concentrations were conducted, EFSA recalculated the sediment concentrations in the test system from the measured water concentration. A

NOEC of 0.0525 mg as/kg sediment was agreed (0.015 mg as/L).
The applicant submitted a Letter of Access to a new study conducted on *Chironomus riparius* (Eckenstein, 2014) of which Syngenta is owner. This study supersedes the previous *C. riparius* study of the annex I inclusion, as the endpoint for sediment is based on a measured and not on an extrapolated sediment value and is therefore more reliable for risk assessment. The overall NOEC from this new study was 8.2 mg/kg dry sediment (equivalent to 0.018 mg a.s./L). This new NOEC endpoint was used in the risk assessment for sediment-dwelling organisms.

9.5.2 Risk assessment

The evaluation of the risk for aquatic and sediment-dwelling organisms was performed in accordance with the recommendations of the "Guidance document on tiered risk assessment for plant protection products for aquatic organisms in edge-of-field surface waters in the context of Regulation (EC) No 1107/2009", as provided by the Commission Services (SANTE-2015-00080, 15 January 2015).
The relevant global maximum FOCUS Step 1, 2 and 3 PEC_{SW} and PECsed, accumulation for risk assessments covering the proposed use pattern and the resulting PEC/RAC ratios are presented in the table below.
The risk assessment is performed for each intended crop by taking the highest PEC values of the multiple and single application(s).

In the table below the D and R scenarios considered relevant for zRMS (Poland) and cMS countries are shown. For completeness all PEC_{sw} and $PEC_{sed,\ accumulation}$ results for the 10 FOCUS scenarios are presented in this core dossier but the scenarios not relevant for these countries are shown in font light grey.

D and R scenarios considered relevant for each country

Country	Scenarios
Poland	D3, D4, R1
Czech Republic	D4, R1
Belgium	D3, D4, R1
Germany	National Specific models
The Netherlands	National Specific models

In the following table, the ratios between predicted environmental concentrations in surface water bodies (PEC_{SW}, $PEC_{SED,\ ACCU}$) and regulatory acceptable concentrations (RAC) for aquatic organisms are given per intended use for each FOCUS scenario and each organism group.

Table 9.5-3: Aquatic organisms: acceptability of risk (PEC/RAC < 1) for Difenoconazole for each organism group based on FOCUS Steps 1, 2 and 3 calculations for the use of GLOB1911F in Potato

Group		**Fish acute**	**Fish acute**	**Fish prolonged**	**Inverteb. acute**		**Inverteb. prolonged**		**Algae**		**Sed. dwell. prolonged**
Test species		***Oncorhynchus mykiss***	***O. mykiss***	***Pimephales promelas***	***Daphnia magna***	***Mysidiopsis bahia***	***Daphnia magna***	~~***Mysidiopsis bahia***~~	***Scenedesmus subspicatus***		***Chironomus riparius***
Endpoint		LC_{50}	LC_{50}	NOEC	EC_{50}	LC_{50}	NOEC	~~NOEC~~	E_bC_{50}*		NOEC
(µg/L)		1100	650	3.6	770	150	5.6	~~4.6~~	32		8200
AF		100	100	10	100	100	10	~~10~~	10		10
RAC (µg/L)		11	6.5	0.36	7.7	1.5	0.56	~~0.46~~	3.2		820
FOCUS Scenario	**PECsw gl-max (µg/L)**									**PECsed, accumulation (µg/kg)**	
Step 1											
	38.4462	**3.495**	**5.91**	**106.795**	**4.993**	**25.631**	**68.654**	~~**83.579**~~	**12.014**	1849.425	**2.255**
Step 2											
N-Europe	5.430	0.494	0.84	**15.084**	0.705	**3.620**	**9.697**	~~**11.805**~~	**1.697**	277.180	0.338
S-Europe	4.511	0.410	0.69	**12.531**	0.586	**3.007**	**8.056**	~~**9.807**~~	**1.410**	228.236	0.278
Step 3											
D3/ditch	0.439	0.040	0.07	**1.219**	0.057	0.293	0.784	~~0.954~~	0.137	**2.551**	0.003
D4/pond	0.060	0.005	0.01	0.167	0.008	0.040	0.107	~~0.131~~	0.019	**3.848**	0.005
D4/stream	0.373	0.034	0.06	**1.036**	0.048	0.249	0.666	~~0.811~~	0.117	0.798	0.001
D6/ditch (1st)	0.531	0.048	0.08	1.475	0.069	0.354	0.948	~~1.154~~	0.166	0.944	0.001

Group		Fish acute	Fish acute	Fish prolonged	Inverteb. acute		Inverteb. prolonged		Algae		Sed. dwell. prolonged
D6/ditch (2nd)	0.945	0.086	0.15	2.626	0.123	0.630	1.688	~~2.055~~	0.295	1.372	0.002
R1/pond	0.333	0.030	0.05	0.924	0.043	0.222	0.594	~~0.723~~	0.104	**24.287**	0.030
R1/stream	0.726	0.066	0.11	**2.016**	0.094	0.484	**1.296**	~~1.578~~	0.227	**49.514**	0.060
R2/stream	0.406	0.037	0.06	1.128	0.053	0.271	0.725	~~0.883~~	0.127	140.672	0.172
R3/stream	0.943	0.086	0.15	2.620	0.122	0.629	1.684	~~2.050~~	0.295	29.129	0.036

AF: Assessment factor; PEC: Predicted environmental concentration; RAC: Regulatory acceptable concentration; PEC/RAC ratios above the relevant trigger of 1 are shown in bold
* $E_bC_{50} = E_rC_{50}$

Table 9.5-4: Aquatic organisms: acceptability of risk (PEC/RAC < 1) for Difenoconazole for each organism group based on FOCUS Steps 1, 2 and 3 calculations for the use of GLOB1911F in Sugar beet

Group		Fish acute	Fish acute	Fish prolonged	Inverteb. acute		Inverteb. prolonged		Algae		Sed. dwell. prolonged
Test species		***Oncorhynchus mykiss***	***O. mykiss***	***Pimephales promelas***	***Daphnia magna***	***Mysidiopsis bahia***	***Daphnia magna***	~~***Mysidiopsis bahia***~~	***Scenedesmus subspicatus***		***Chironomus riparius***
Endpoint		LC_{50}	LC_{50}	NOEC	EC_{50}	LC_{50}	NOEC	~~NOEC~~	E_bC_{50}*		NOEC
(µg/L)		1100	650	3.6	770	150	5.6	~~4.6~~	32		8200
AF		100	100	10	100	100	10	~~10~~	10		10
RAC (µg/L)		11	6.5	0.36	7.7	1.5	0.56	~~0.46~~	3.2		820
FOCUS Scenario	**PECsw gl-max (µg/L)**									**PECsed, accumulation (µg/kg)**	
Step 1											
	19.223	**1.748**	**2.96**	**53.398**	**2.497**	**12.815**	**34.327**	~~**41.789**~~	**6.007**	925.962	**1.129**
Step 2											
~~N Europe~~	~~1.514~~	~~0.138~~	~~0.23~~	~~**4.205**~~	~~0.197~~	~~**1.009**~~	~~**2.703**~~	~~**3.291**~~	~~0.473~~	~~72.575~~	~~0.089~~

Group		Fish acute	Fish acute	Fish prolonged	Inverteb. acute		Inverteb. prolonged		Algae		Sed. dwell. prolonged
N-Europe	2.552	0.23	0.39	7.09	0.33	1.70	4.56	5.55	0.80	127.8	0.16
~~S-Europe~~	~~2.472~~	~~0.225~~	~~0.38~~	~~**6.867**~~	~~0.321~~	~~**1.648**~~	~~**4.415**~~	~~5.374~~	~~0.773~~	~~123.596~~	~~0.151~~
S-Europe	2.153	0.20	0.33	5.98	0.28	1.44	3.84	4.68	0.67	106.6	0.13
Step 3											
D3/ditch	0.565	0.051	0.09	**1.571**	0.073	0.377	**1.010**	~~1.229~~	0.177	1.841	0.002
D4/pond	0.035	0.003	0.01	0.098	0.005	0.024	0.063	~~0.077~~	0.011	2.003	0.002
D4/stream	0.451	0.041	0.07	**1.253**	0.059	0.301	0.805	~~0.980~~	0.141	0.320	0.000
R1/pond	0.154	0.014	0.02	0.428	0.020	0.103	0.275	~~0.335~~	0.048	12.761	0.016
R1/stream	0.485	0.044	0.07	**1.346**	0.063	0.323	0.865	~~**1.053**~~	0.151	34.753	0.042
R3/stream	0.548	0.050	0.08	**1.523**	0.071	0.366	0.979	~~**1.192**~~	0.171	13.433	0.016

AF: Assessment factor; PEC: Predicted environmental concentration; RAC: Regulatory acceptable concentration; PEC/RAC ratios above the relevant trigger of 1 are shown in bold

* $E_bC_{50} = E_rC_{50}$

Table 9.5-5: Aquatic organisms: acceptability of risk (PEC/RAC < 1) for Difenoconazole for each organism group based on FOCUS Steps 1, 2 and 3 calculations for the use of GLOB1911F in Winter oilseed rape

Group		**Fish acute**	**Fish acute**	**Fish prolonged**	**Inverteb. acute**		**Inverteb. prolonged**		**Algae**		**Sed. dwell. prolonged**
Test species		***Oncorhynchus mykiss***	***O. mykiss***	***Pimephales promelas***	***Daphnia magna***	***Mysidiopsis bahia***	***Daphnia magna***	~~***Mysidiopsis bahia***~~	***Scenedesmus subspicatus***		***Chironomus riparius***
Endpoint		LC_{50}	LC_{50}	NOEC	EC_{50}	LC_{50}	NOEC	~~NOEC~~	E_bC_{50}*		NOEC
(µg/L)		1100	650	3.6	770	150	5.6	~~4.6~~	32		8200
AF		100	100	10	100	100	10	~~10~~	10		10
RAC (µg/L)		11	6.5	0.36	7.7	1.5	0.56	~~0.46~~	3.2		820
FOCUS Scenario	**PECsw $_{gl\text{-}max}$ (µg/L)**									**PECsed, accumulation (µg/kg)**	

Group		Fish acute	Fish acute	Fish prolonged	Inverteb. acute		Inverteb. prolonged		Algae		Sed. dwell. prolonged
Step 1											
	19.223	**1.748**	**2.96**	**53.398**	**2.497**	**12.815**	**34.327**	~~41.789~~	**6.007**	925.962	**1.129**
Step 2											
N-Europe	5.347	0.486	0.82	**14.853**	0.694	**3.565**	**9.548**	~~11.624~~	**1.671**	276.661	0.337
S-Europe	4.389	0.399	0.68	**12.191**	0.570	**2.926**	**7.837**	~~9.541~~	**1.372**	225.640	0.275
Step 3											
First application: autumn											
D2/ditch	0.754	0.069	0.12	2.094	0.098	0.503	1.346	~~1.639~~	0.236	16.605	0.020
D2/stream	0.629	0.057	0.10	1.747	0.082	0.419	1.123	~~1.367~~	0.197	10.953	0.013
D3/ditch	0.694	0.063	0.11	**1.928**	0.090	0.463	**1.239**	~~1.509~~	0.217	4.005	0.005
D4/pond	0.038	0.003	0.01	0.106	0.005	0.025	0.068	~~0.083~~	0.012	2.362	0.003
D4/stream	0.589	0.054	0.09	**1.636**	0.076	0.393	**1.052**	~~1.280~~	0.184	0.593	0.001
D5/pond	0.038	0.003	0.01	0.106	0.005	0.025	0.068	~~0.083~~	0.012	1.496	0.002
D5/stream	0.635	0.058	0.10	1.764	0.082	0.423	1.134	~~1.380~~	0.198	0.85	0.001
R1/pond	0.105	0.010	0.02	0.292	0.014	0.070	0.188	~~0.229~~	0.033	7.162	0.009
R1/stream	0.517	0.047	0.08	**1.436**	0.067	0.345	0.923	~~1.124~~	0.162	6.007	0.007
R3/stream	0.629	0.057	**0.10**	1.747	0.082	0.419	1.123	~~1.367~~	0.197	18.075	0.022
First application: spring											
D2/ditch	0.975	0.089	0.98	2.708	0.127	0.650	1.741	~~2.120~~	0.305	24.654	0.030
D2/stream	0.624	0.057	0.62	1.733	0.081	0.416	1.114	~~1.357~~	0.195	11.39	0.014
D3/ditch	0.691	0.063	~~0.69~~ 0.11	**1.919**	0.090	0.461	**1.234**	~~1.502~~	0.216	2.964	0.004
D4/pond	0.036	0.003	~~0.04~~ 0.01	0.100	0.005	0.024	0.064	~~0.078~~	0.011	1.892	0.002

Group		Fish acute	Fish acute	Fish prolonged	Inverteb. acute		Inverteb. prolonged		Algae		Sed. dwell. prolonged
D4/stream	0.589	0.054	~~0.59~~ 0.09	**1.636**	0.076	0.393	**1.052**	~~1.280~~	0.184	0.608	0.001
D5/pond	0.037	0.003	0.04	0.103	0.005	0.025	0.066	~~0.080~~	0.012	1.53	0.002
D5/stream	0.635	0.058	0.64	1.764	0.082	0.423	1.134	~~1.380~~	0.198	0.619	0.001
R1/pond	0.088	0.008	~~0.09~~ 0.01	0.244	0.011	0.059	0.157	~~0.191~~	0.028	5.668	0.007
R1/stream	0.445	0.040	~~0.45~~ 0.07	**1.236**	0.058	0.297	0.795	~~0.967~~	0.139	16.343	0.020
R3/stream	0.633	0.058	~~0.63~~ 0.10	**1.758**	0.082	0.422	**1.130**	~~1.376~~	0.198	3.954	0.005

AF: Assessment factor; PEC: Predicted environmental concentration; RAC: Regulatory acceptable concentration; PEC/RAC ratios above the relevant trigger of 1 are shown in bold
* $E_bC_{50} = E_rC_{50}$

Table 9.5-6: Aquatic organisms: acceptability of risk (PEC/RAC < 1) for Difenoconazole for each organism group based on FOCUS Steps 1, 2 and 3 calculations for the use of GLOB1911F in Spring oilseed rape

Group		Fish acute	Fish acute	Fish prolonged	Inverteb. acute		Inverteb. prolonged		Algae		Sed. dwell. prolonged
Test species		***Oncorhynchus mykiss***	***O. mykiss***	***Pimephales promelas***	***Daphnia magna***	***Mysidiopsis bahia***	***Daphnia magna***	~~***Mysidiopsis bahia***~~	***Scenedesmus subspicatus***		***Chironomus riparius***
Endpoint		LC_{50}	LC_{50}	NOEC	EC_{50}	LC_{50}	NOEC	~~NOEC~~	E_bC_{50}*		NOEC
(µg/L)		1100	650	3.6	770	150	5.6	~~4.6~~	32		8200
AF		100	100	10	100	100	10	~~10~~	10		10
RAC (µg/L)		11	6.5	0.36	7.7	1.5	0.56	~~0.46~~	3.2		820
FOCUS Scenario	**PECsw gl-max (µg/L)**									**PECsed, accumulation (µg/kg)**	

Group		Fish acute	Fish acute	Fish prolonged	Inverteb. acute		Inverteb. prolonged		Algae		Sed. dwell. prolonged
Step 1											
	19.223	**1.748**	**2.96**	**53.398**	**2.497**	**12.815**	**34.327**	~~41.789~~	**6.007**	903.083	**1.101**
Step 2											
N-Europe	5.347	0.486	0.82	**14.853**	0.694	**3.565**	**9.548**	~~11.624~~	**1.671**	276.661	0.337
~~S-Europe~~	~~5.389~~	~~0.490~~	~~0.83~~	~~**14.969**~~	~~0.700~~	~~**3.592**~~	~~**9.623**~~	~~**11.715**~~	~~**1.684**~~	225.640	0.275
S-Europe	4.389	0.40	0.68	12.19	0.57	2.93	7.84	~~9.54~~	1.37		
Step 3											
D1/ditch	0.857	0.078	0.13	2.381	0.111	0.571	1.530	~~**1.863**~~	0.268	24.357	0.030
D1/stream	0.602	0.055	0.09	1.672	0.078	0.401	1.075	~~**1.309**~~	0.188	2.089	0.003
D3/ditch	0.693	0.063	0.11	**1.925**	0.090	0.462	**1.238**	~~**1.507**~~	0.217	3.746	0.005
D4/pond	0.037	0.003	0.01	0.103	0.005	0.025	0.066	~~0.080~~	0.012	1.972	0.002
D4/stream	0.589	0.054	0.09	**1.636**	0.076	0.393	**1.052**	~~**1.280**~~	0.184	0.756	0.0009
D5/pond	0.038	0.003	0.01	0.106	0.005	0.025	0.068	~~0.083~~	0.012	1.544	0.002
D5/stream	0.636	0.058	0.10	1.764	0.082	0.423	1.134	~~**1.380**~~	0.198	0.843	0.0010
R1/pond	0.093	0.008	0.01	0.258	0.012	0.062	0.166	~~0.202~~	0.029	8.442	0.010
R1/stream	0.45	0.041	0.07	**1.250**	0.058	0.300	0.804	~~0.978~~	0.141	22.72	0.028

AF: Assessment factor; PEC: Predicted environmental concentration; RAC: Regulatory acceptable concentration; PEC/RAC ratios above the relevant trigger of 1 are shown in bold

* $E_bC_{50} = E_rC_{50}$

For all intended uses, calculated PEC/RAC ratios did not indicate an acceptable risk for the most sensitive group of aquatic organisms (risk for Fish prolonged as characterised by a NOEC for *Pimephales promelas* of 3.6 µg/L in connection with an assessment factor of 10) in several FOCUS Steps 1-3 scenarios. Therefore, further PEC/RAC ratios were calculated based on FOCUS Step 4 PEC_{SW} considering reduced exposure of surface water bodies.

No spray buffer zone of 5, 10, 15 and 20 meters were used, sometimes coupled with run-off mitigation measures. For the fractional reduction in run-off volume and run-off flux as well as erosion volume and erosion flux which were used for mitigation purposes, reference is made to the dRR Part B Section 8, 8.9. Both single and multiple applications were envisaged since the drift percentages depend on the number of applications and this has an impact on the PEC values.

Table 9.5-7: Aquatic organisms: PEC_{SW} (µg/L) calculation and acceptability of risk (PEC/RAC < 1) for Difenoconazole based on FOCUS Step 4 calculations and toxicity data for Fish prolonged (*Pimephales promelas)* with mitigation of spray drift and run-off for the use of GLOB1911F in Potato – multiple applications

Intended use **Active substance** **Application rate (kg/ha)**		Potato Difenoconazole 4 × 0.125 kg a.s./ha						
Nozzle reduction	**No-spray buffer (m)**	FOCUS default	5	10	15	20	10	20
	Vegetated filter strip (m)	None	None	None	None	None	10	20
None	D3 ditch	0.4389	0.1424	0.07504	0.05104	0.03872	-	-
50 %		0.2658	0.07111	0.03748	0.0255	0.01934	-	-
75 %		0.1328	0.03551	0.01872	0.01273	0.00966	-	-
90 %		0.05304	0.01419	0.007473	0.005082	0.003855	-	-
None	D4 pond	0.06007	0.05818	0.05377	0.05152	0.0501	-	-
50 %		0.05618	0.05045	0.04831	0.04721	0.04652	-	-
75 %		0.04948	0.0467	0.04565	0.04512	0.04478	-	-
90 %		0.04558	0.04451	0.0441	0.0439	0.04377	-	-
None	D4 stream	0.3729	0.2	0.2	0.2	0.2	-	-
50 %		0.2906	0.2	0.2	0.2	0.2	-	-
75 %		0.2	0.2	0.2	0.2	0.2	-	-

90 %		0.2	0.2	0.2	0.2	0.2	-	-
None	D6 ditch (1st)	0.5309	0.5309	0.5309	0.5309	0.5309	-	-
50 %		0.5309	0.5309	0.5309	0.5309	0.5309	-	-
75 %		0.5309	0.5309	0.5309	0.5309	0.5309	-	-
90 %		0.5309	0.5309	0.5309	0.5309	0.5309	-	-
None	D6 ditch (2nd)	0.9454	0.9454	0.9454	0.9454	0.9454	-	-
50 %		0.9454	0.9454	0.9454	0.9454	0.9454	-	-
75 %		0.9454	0.9454	0.9454	0.9454	0.9454	-	-
90 %		0.9454	0.9454	0.9454	0.9454	0.9454	-	-
None	R1 pond	0.3328	0.3317	0.3292	0.328	0.3271	0.329 0.141	0.07202
50 %		0.3306	0.3273	0.3261	0.3255	0.3251	0.329 0.138	0.06978
75 %		0.3268	0.3252	0.3245	0.3242	0.324	0.329 0.136	0.06867
90 %		0.3245	0.3238	0.3236	0.3235	0.3234	0.329 0.135	0.068
None	R1 stream	0.7258	0.7258	0.7258	0.7258	0.7258	0.3292	0.1722
50 %		0.7258	0.7258	0.7258	0.7258	0.7258	0.3292	0.1722
75 %		0.7258	0.7258	0.7258	0.7258	0.7258	0.3292	0.1722
90 %		0.7258	0.7258	0.7258	0.7258	0.7258	0.3292	0.1722
None	R2 stream	0.4061	0.2812	0.2812	0.2812	0.2812	0.1276	0.06676
50 %		0.3165	0.2812	0.2812	0.2812	0.2812	0.1276	0.06676
75 %		0.2812	0.2812	0.2812	0.2812	0.2812	0.1276	0.06676
90 %		0.2812	0.2812	0.2812	0.2812	0.2812	0.1276	0.06676
None	R3 stream	0.9431	0.9431	0.9431	0.9431	0.9431	0.4297	0.2252
50 %		0.9431	0.9431	0.9431	0.9431	0.9431	0.4297	0.2252

75 %		0.9431	0.9431	0.9431	0.9431	0.9431	0.4297	0.2252
90 %		0.9431	0.9431	0.9431	0.9431	0.9431	0.4297	0.2252
RAC (µg/L) 0.36		**PEC/RAC ratio**						
None	D3 ditch	**1.219**	0.396	0.208	0.142	0.108	-	-
50 %		0.738	0.198	0.104	0.071	0.054	-	-
75 %		0.369	0.099	0.052	0.035	0.027	-	-
90 %		0.147	0.039	0.021	0.014	0.011	-	-
None	D4 pond	0.167	0.162	0.149	0.143	0.139	-	-
50 %		0.156	0.140	0.134	0.131	0.129	-	-
75 %		0.137	0.130	0.127	0.125	0.124	-	-
90 %		0.127	0.124	0.123	0.122	0.122	-	-
None	D4 stream	**1.036**	0.556	0.556	0.556	0.556	-	-
50 %		0.807	0.556	0.556	0.556	0.556	-	-
75 %		0.556	0.556	0.556	0.556	0.556	-	-
90 %		0.556	0.556	0.556	0.556	0.556	-	-
None	D6 ditch (1st)	1.475	1.475	1.475	1.475	1.475	-	-
50 %		1.475	1.475	1.475	1.475	1.475	-	-
75 %		1.475	1.475	1.475	1.475	1.475	-	-
90 %		1.475	1.475	1.475	1.475	1.475	-	-
None	D6 ditch (2nd)	2.626	2.626	2.626	2.626	2.626	-	-
50 %		2.626	2.626	2.626	2.626	2.626	-	-
75 %		2.626	2.626	2.626	2.626	2.626	-	-
90 %		2.626	2.626	2.626	2.626	2.626	-	-
None	R1 pond	0.924	0.921	0.914	0.911	0.909	0.414 0.392	0.200

50 %		0.918	0.909	0.906	0.904	0.903	~~0.914~~ 0.383	0.194
75 %		0.908	0.903	0.901	0.901	0.900	~~0.914~~ 0.378	0.191
90 %		0.901	0.899	0.899	0.899	0.898	~~0.914~~ 0.375	0.189
None	R1 stream	**2.016**	**2.016**	**2.016**	**2.016**	**2.016**	0.914	0.478
50 %		**2.016**	**2.016**	**2.016**	**2.016**	**2.016**	0.914	0.478
75 %		**2.016**	**2.016**	**2.016**	**2.016**	**2.016**	0.914	0.478
90 %		**2.016**	**2.016**	**2.016**	**2.016**	**2.016**	0.914	0.478
None	R2 stream	1.128	0.781	0.781	0.781	0.781	0.354	0.185
50 %		0.879	0.781	0.781	0.781	0.781	0.354	0.185
75 %		0.781	0.781	0.781	0.781	0.781	0.354	0.185
90 %		0.781	0.781	0.781	0.781	0.781	0.354	0.185
None	R3 stream	2.620	2.620	2.620	2.620	2.620	1.194	0.626
50 %		2.620	2.620	2.620	2.620	2.620	1.194	0.626
75 %		2.620	2.620	2.620	2.620	2.620	1.194	0.626
90 %		2.620	2.620	2.620	2.620	2.620	1.194	0.626

PEC: Predicted environmental concentration; RAC: Regulatory acceptable concentration; PEC/RAC ratios above the relevant trigger of 1 are shown in bold

Table 9.5-8: Aquatic organisms: PEC_{SW} (µg/L) calculation and acceptability of risk (PEC/RAC < 1) for Difenoconazole based on FOCUS Step 4 calculations and toxicity data for Fish prolonged (*Pimephales promelas)* with mitigation of spray drift and run-off for the use of GLOB1911F in Potato – single application

Intended use **Active substance** **Application rate (kg/ha)**		Potato Difenoconazole 1 × 0.125 kg a.s./ha						
Nozzle	**No-spray buffer (m)**	FOCUS default	5	10	15	20	10	20

reduction	**Vegetated filter strip (m)**	None	None	None	None	None	10	20
None	D3 ditch	0.651	0.213	0.113	0.077	0.059	-	-
50 %		0.394	0.107	0.056	0.039	0.029	-	-
75 %		0.197	0.053	0.028	0.019	0.015	-	-
90 %		0.079	0.021	0.011	0.008	0.006	-	-
None	D4 pond	0.026	0.023	0.017	0.013	0.011	-	-
50 %		0.020	0.012	0.009	0.009	0.009	-	-
75 %		0.010	0.009	0.009	0.008	0.008	-	-
90 %		0.009	0.008	0.008	0.008	0.008	-	-
None	D4 stream	0.477	0.201	0.106	0.073	0.055	-	-
50 %		0.370	0.100	0.053	0.041	0.041	-	-
75 %		0.185	0.050	0.041	0.041	0.041	-	-
90 %		0.074	0.041	0.041	0.041	0.041	-	-
None	D6 ditch (1st)	0.649	0.212	0.113	0.084	0.084	-	-
50 %		0.392	0.106	0.084	0.084	0.084	-	-
75 %		0.196	0.084	0.084	0.084	0.084	-	-
90 %		0.084	0.084	0.084	0.084	0.084	-	-
None	D6 ditch (2nd)	0.646	0.212	0.165	0.165	0.165	-	-
50 %		0.391	0.165	0.165	0.165	0.165	-	-
75 %		0.195	0.165	0.165	0.165	0.165	-	-
90 %		0.165	0.165	0.165	0.165	0.165	-	-
None	R1 pond	0.078	0.076	0.073	0.072	0.072	0.035	0.019
50 %		0.075	0.072	0.072	0.072	0.071	0.031	0.016
75 %		0.072	0.071	0.071	0.071	0.071	0.030	0.015
90 %		0.071	0.071	0.071	0.071	0.071	0.030	0.015

None	R1 stream	0.452	0.244	0.244	0.244	0.244	0.111	0.058
50 %		0.351	0.244	0.244	0.244	0.244	0.111	0.058
75 %		0.244	0.244	0.244	0.244	0.244	0.111	0.058
90 %		0.244	0.244	0.244	0.244	0.244	0.111	0.058
None	R2 stream	0.605	0.255	0.135	0.092	0.070	0.135	0.070
50 %		0.470	0.127	0.067	0.065	0.065	0.067	0.035
75 %		0.235	0.065	0.065	0.065	0.065	0.034	0.017
90 %		0.094	0.065	0.065	0.065	0.065	0.030	0.016
None	R3 stream	0.635	0.267	0.204	0.204	0.204	0.141	0.073
50 %		0.493	0.204	0.204	0.204	0.204	0.093	0.049
75 %		0.246	0.204	0.204	0.204	0.204	0.093	0.049
90 %		0.204	0.204	0.204	0.204	0.204	0.093	0.049
RAC (µg/L) 0.36		**PEC/RAC ratio**						
None	D3 ditch	**1.808**	0.592	0.314	0.214	0.163	-	-
50 %		**1.093**	0.296	0.157	0.107	0.081	-	-
75 %		0.546	0.148	0.078	0.053	0.041	-	-
90 %		0.218	0.059	0.031	0.021	0.016	-	-
None	D4 pond	0.073	0.065	0.047	0.037	0.031	-	-
50 %		0.056	0.032	0.026	0.025	0.025	-	-
75 %		0.028	0.025	0.024	0.023	0.023	-	-
90 %		0.024	0.023	0.023	0.022	0.022	-	-
None	D4 stream	**1.325**	0.557	0.295	0.202	0.153	-	-
50 %		**1.029**	0.278	0.147	0.113	0.113	-	-
75 %		0.514	0.139	0.113	0.113	0.113	-	-

90 %		0.205	0.113	0.113	0.113	0.113	-	-
None	D6 ditch (1st)	1.802	0.590	0.313	0.234	0.234	-	-
50 %		1.089	0.295	0.234	0.234	0.234	-	-
75 %		0.544	0.234	0.234	0.234	0.234	-	-
90 %		0.234	0.234	0.234	0.234	0.234	-	-
None	D6 ditch (2nd)	1.795	0.588	0.457	0.457	0.457	-	-
50 %		1.085	0.457	0.457	0.457	0.457	-	-
75 %		0.542	0.457	0.457	0.457	0.457	-	-
90 %		0.457	0.457	0.457	0.457	0.457	-	-
None	R1 pond	0.216	0.212	0.203	0.201	0.200	0.097	0.052
50 %		0.208	0.200	0.199	0.199	0.198	0.085	0.044
75 %		0.200	0.198	0.198	0.198	0.197	0.083	0.042
90 %		0.198	0.197	0.197	0.197	0.197	0.082	0.041
None	R1 stream	**1.254**	0.678	0.678	0.678	0.678	0.308	0.161
50 %		0.974	0.678	0.678	0.678	0.678	0.308	0.161
75 %		0.678	0.678	0.678	0.678	0.678	0.308	0.161
90 %		0.678	0.678	0.678	0.678	0.678	0.308	0.161
None	R2 stream	1.682	0.708	0.375	0.256	0.195	0.375	0.195
50 %		1.306	0.353	0.187	0.181	0.181	0.187	0.097
75 %		0.653	0.181	0.181	0.181	0.181	0.094	0.049
90 %		0.261	0.181	0.181	0.181	0.181	0.083	0.043
None	R3 stream	1.763	0.741	0.566	0.566	0.566	0.393	0.204
50 %		1.369	0.566	0.566	0.566	0.566	0.258	0.135
75 %		0.684	0.566	0.566	0.566	0.566	0.258	0.135
90 %		0.566	0.566	0.566	0.566	0.566	0.258	0.135

PEC: Predicted environmental concentration; RAC: Regulatory acceptable concentration; PEC/RAC ratios above the relevant trigger of 1 are shown in bold

Table 9.5-9: Aquatic organisms: PEC_{sw} (µg/L) calculation and acceptability of risk (PEC/RAC < 1) for Difenoconazole based on FOCUS Step 4 calculations and toxicity data for Fish prolonged (*Pimephales promelas)* with mitigation of spray drift and run-off for the use of GLOB1911F in Sugar beet – multiple applications

Intended use		Sugar beet						
Active substance		Difenoconazole						
Application rate (kg/ha)		2 × 0.125 kg a.s./ha						
Nozzle reduction	**No-spray buffer (m)**	FOCUS default	5	10	15	20	10	20
	Vegetated filter strip (m)	None	None	None	None	None	10	20
None	D3 ditch	0.689	0.178	0.093	0.062	0.047	-	-
50 %		0.344	0.089	0.046	0.031	0.023	-	-
75 %		0.172	0.045	0.023	0.016	0.012	-	-
90 %		0.069	0.018	0.009	0.006	0.005	-	-
None	D4 pond	0.056	0.031	0.022	0.020	0.020	-	-
50 %		0.028	0.020	0.019	0.019	0.019	-	-
75 %		0.020	0.019	0.018	0.018	0.018	-	-
90 %		0.018	0.018	0.018	0.018	0.018	-	-
None	D4 stream	0.711	0.184	0.112	0.112	0.112	-	-
50 %		0.355	0.112	0.112	0.112	0.112	-	-
75 %		0.178	0.112	0.112	0.112	0.112	-	-
90 %		0.112	0.112	0.112	0.112	0.112	-	-
None	R1 pond	0.169	0.153	0.151	0.150	0.150	0.069	0.037
50 %		0.152	0.150	0.150	0.149	0.149	0.063	0.032
75 %		0.150	0.149	0.149	0.149	0.148	0.062	0.031
90 %		0.149	0.148	0.148	0.148	0.148	0.062	0.031

None	R1 stream	0.613	0.485	0.485	0.485	0.485	0.221	0.116
50 %		0.485	0.485	0.485	0.485	0.485	0.221	0.116
75 %		0.485	0.485	0.485	0.485	0.485	0.221	0.116
90 %		0.485	0.485	0.485	0.485	0.485	0.221	0.116
None	R3 stream	0.865	0.395	0.395	0.395	0.395	0.180	0.094
50 %		0.432	0.395	0.395	0.395	0.395	0.180	0.094
75 %		0.395	0.395	0.395	0.395	0.395	0.180	0.094
90 %		0.395	0.395	0.395	0.395	0.395	0.180	0.094
RAC (µg/L) 0.36		**PEC/RAC ratio**						
None	D3 ditch	**1.913**	0.496	0.257	0.173	0.131	-	-
50 %		0.955	0.248	0.128	0.087	0.065	-	-
75 %		0.478	0.124	0.064	0.043	0.033	-	-
90 %		0.191	0.049	0.026	0.017	0.013	-	-
None	D4 pond	0.156	0.087	0.062	0.057	0.055	-	-
50 %		0.078	0.056	0.054	0.052	0.052	-	-
75 %		0.055	0.052	0.051	0.050	0.050	-	-
90 %		0.051	0.049	0.049	0.049	0.049	-	-
None	D4 stream	**1.975**	0.512	0.311	0.311	0.311	-	-
50 %		0.987	0.311	0.311	0.311	0.311	-	-
75 %		0.493	0.311	0.311	0.311	0.311	-	-
90 %		0.311	0.311	0.311	0.311	0.311	-	-
None	R1 pond	0.469	0.424	0.420	0.418	0.417	0.190	0.103
50 %		0.422	0.417	0.415	0.414	0.414	0.175	0.089
75 %		0.416	0.414	0.413	0.413	0.412	0.173	0.087

90 %		0.413	0.412	0.411	0.411	0.411	0.171	0.086
None	R1 stream	**1.704**	**1.346**	**1.346**	**1.346**	**1.346**	0.613	0.321
50 %		**1.346**	**1.346**	**1.346**	**1.346**	**1.346**	0.613	0.321
75 %		**1.346**	**1.346**	**1.346**	**1.346**	**1.346**	0.613	0.321
90 %		**1.346**	**1.346**	**1.346**	**1.346**	**1.346**	0.613	0.321
None	R3 stream	**2.402**	**1.097**	**1.097**	**1.097**	**1.097**	0.499	0.262
50 %		**1.201**	**1.097**	**1.097**	**1.097**	**1.097**	0.499	0.262
75 %		**1.097**	**1.097**	**1.097**	**1.097**	**1.097**	0.499	0.262
90 %		**1.097**	**1.097**	**1.097**	**1.097**	**1.097**	0.499	0.262

PEC: Predicted environmental concentration; RAC: Regulatory acceptable concentration; PEC/RAC ratios above the relevant trigger of 1 are shown in bold

Table 9.5-10: Aquatic organisms: PEC_{sw} (µg/L) calculation and acceptability of risk (PEC/RAC < 1) for Difenoconazole based on FOCUS Step 4 calculations and toxicity data for Fish prolonged (*Pimephales promelas)* with mitigation of spray drift and run-off for the use of GLOB1911F in Sugar beet – single application

Intended use		Sugar beet						
Active substance		Difenoconazole						
Application rate (kg/ha)		1 × 0.125 kg a.s./ha						
Nozzle reduction	**No-spray buffer (m)**	FOCUS default	5	10	15	20	10	20
	Vegetated filter strip (m)	None	None	None	None	None	10	20
None	D3 ditch	0.787	0.213	0.113	0.077	0.059	-	-
50 %		0.393	0.106	0.056	0.038	0.029	-	-
75 %		0.196	0.053	0.028	0.019	0.015	-	-
90 %		0.078	0.021	0.011	0.008	0.006	-	-
None	D4 pond	0.041	0.023	0.017	0.013	0.011	-	-
50 %		0.020	0.012	0.008	0.008	0.008	-	-

75 %		0.010	0.008	0.076	0.008	0.007	-	-
90 %		0.008	0.007	0.007	0.007	0.007	-	-
None	D4 stream	0.814	0.220	0.117	0.080	0.061	-	-
50 %		0.407	0.110	0.058	0.048	0.048	-	-
75 %		0.203	0.055	0.048	0.048	0.048	-	-
90 %		0.081	0.048	0.048	0.048	0.048	-	-
None	R1 pond	0.082	0.074	0.071	0.069	0.068	0.034	0.018
50 %		0.072	0.068	0.067	0.066	0.066	0.029	0.015
75 %		0.067	0.066	0.066	0.066	0.066	0.028	0.014
90 %		0.066	0.065	0.065	0.065	0.065	0.027	0.014
None	R1 stream	0.702	0.235	0.235	0.235	0.235	0.107	0.056
50 %		0.351	0.235	0.235	0.235	0.235	0.107	0.056
75 %		0.235	0.235	0.235	0.235	0.235	0.107	0.056
90 %		0.235	0.235	0.235	0.235	0.235	0.107	0.056
None	R3 stream	0.986	0.267	0.206	0.206	0.206	0.142	0.073
50 %		0.493	0.206	0.206	0.206	0.206	0.093	0.049
75 %		0.246	0.206	0.206	0.206	0.206	0.093	0.049
90 %		0.206	0.206	0.206	0.206	0.206	0.093	0.049
RAC (µg/L) 0.36		**PEC/RAC ratio**						
None	D3 ditch	**2.185**	0.591	0.313	0.214	0.163	-	-
50 %		**1.092**	0.296	0.157	0.107	0.081	-	-
75 %		0.546	0.148	0.078	0.053	0.041	-	-
90 %		0.218	0.059	0.031	0.021	0.016	-	-
None	D4 pond	0.113	0.065	0.047	0.037	0.031	-	-

50 %		0.056	0.032	0.023	0.022	0.022	-	-
75 %		0.028	0.022	0.212	0.021	0.021	-	-
90 %		0.021	0.020	0.020	0.020	0.020	-	-
None	D4 stream	**2.261**	0.612	0.324	0.221	0.168	-	-
50 %		**1.130**	0.306	0.162	0.134	0.134	-	-
75 %		0.564	0.153	0.134	0.134	0.134	-	-
90 %		0.225	0.134	0.134	0.134	0.134	-	-
None	R1 pond	0.228	0.205	0.196	0.191	0.189	0.093	0.050
50 %		0.201	0.189	0.185	0.183	0.183	0.082	0.043
75 %		0.187	0.183	0.182	0.182	0.182	0.077	0.039
90 %		0.182	0.182	0.182	0.182	0.182	0.076	0.038
None	R1 stream	**1.949**	0.653	0.653	0.653	0.653	0.297	0.156
50 %		0.974	0.653	0.653	0.653	0.653	0.297	0.156
75 %		0.653	0.653	0.653	0.653	0.653	0.297	0.156
90 %		0.653	0.653	0.653	0.653	0.653	0.297	0.156
None	R3 stream	**2.739**	0.742	0.573	0.573	0.573	0.393	0.204
50 %		**1.369**	0.573	0.573	0.573	0.573	0.260	0.136
75 %		0.684	0.573	0.573	0.573	0.573	0.260	0.136
90 %		0.573	0.573	0.573	0.573	0.573	0.260	0.136

PEC: Predicted environmental concentration; RAC: Regulatory acceptable concentration; PEC/RAC ratios above the relevant trigger of 1 are shown in bold

Table 9.5-11: Aquatic organisms: PEC_{sw} (µg/L) calculation and acceptability of risk (PEC/RAC < 1) for Difenoconazole based on FOCUS Step 4 calculations and toxicity data for Fish prolonged (*Pimephales promelas)* with mitigation of spray drift and run-off for the use of GLOB1911F in Winter oilseed rape – First application: autumn - multiple applications

Intended use	Winter oilseed rape
Active substance	Difenoconazole

Application rate (kg/ha)		2 × 0.125 kg a.s./ha						
Nozzle reduction	**No-spray buffer (m)**	FOCUS default	5	10	15	20	10	20
	Vegetated filter strip (m)	None	None	None	None	None	10	20
None	D2 ditch	0.754	0.573	0.573	0.573	0.573	-	-
50 %		0.573	0.573	0.573	0.573	0.573	-	-
75 %		0.573	0.573	0.573	0.573	0.573	-	-
90 %		0.573	0.573	0.573	0.573	0.573	-	-
None	D2 stream	0.629	0.362	0.362	0.362	0.362	-	-
50 %		0.433	0.362	0.362	0.362	0.362	-	-
75 %		0.362	0.362	0.362	0.362	0.362	-	-
90 %		0.362	0.362	0.362	0.362	0.362	-	-
None	D3 ditch	0.694	0.180	0.093	0.063	0.047	-	-
50 %		0.346	0.090	0.047	0.031	0.024	-	-
75 %		0.173	0.045	0.023	0.016	0.012	-	-
90 %		0.069	0.018	0.009	0.006	0.005	-	-
None	D4 pond	0.038	0.036	0.032	0.029	0.028	-	-
50 %		0.034	0.029	0.027	0.026	0.025	-	-
75 %		0.028	0.025	0.024	0.024	0.023	-	-
90 %		0.024	0.023	0.023	0.023	0.022	-	-
None	D4 stream	0.589	0.208	0.141	0.141	0.141	-	-
50 %		0.401	0.141	0.141	0.141	0.141	-	-
75 %		0.200	0.141	0.141	0.141	0.141	-	-
90 %		0.141	0.141	0.141	0.141	0.141	-	-
None	D5 pond	0.038	0.032	0.023	0.018	0.015	-	-
50 %		0.029	0.016	0.012	0.009	0.008	-	-

75 %		0.014	0.008	0.006	0.005	0.004	-	-
90 %		0.006	0.003	0.003	0.003	0.003	-	-
None	D5 stream	0.635	0.224	0.116	0.078	0.059	-	-
50 %		0.432	0.112	0.058	0.039	0.031	-	-
75 %		0.216	0.056	0.031	0.031	0.031	-	-
90 %		0.086	0.031	0.031	0.031	0.031	-	-
None	R1 pond	0.105	0.103	0.100	0.098	0.097	0.045	0.023
50 %		0.102	0.098	0.096	0.096	0.095	0.041	0.021
75 %		0.097	0.095	0.095	0.094	0.094	0.039	0.020
90 %		0.095	0.094	0.094	0.093	0.093	0.038	0.019
None	R1 stream	0.517	0.517	0.517	0.517	0.517	0.231	0.120
50 %		0.517	0.517	0.517	0.517	0.517	0.231	0.120
75 %		0.517	0.517	0.517	0.517	0.517	0.231	0.120
90 %		0.517	0.517	0.517	0.517	0.517	0.231	0.120
None	R3 stream	0.629	0.540	0.540	0.540	0.540	0.246	0.129
50 %		0.540	0.540	0.540	0.540	0.540	0.246	0.129
75 %		0.540	0.540	0.540	0.540	0.540	0.246	0.129
90 %		0.540	0.540	0.540	0.540	0.540	0.246	0.129
RAC (µg/L) 0.36		**PEC/RAC ratio**						
None	D2 ditch	2.096	1.591	1.591	1.591	1.591	-	-
50 %		1.591	1.591	1.591	1.591	1.591	-	-
75 %		1.591	1.591	1.591	1.591	1.591	-	-
90 %		1.591	1.591	1.591	1.591	1.591	-	-
None	D2 stream	1.746	1.006	1.006	1.006	1.006	-	-

50 %		1.202	1.006	1.006	1.006	1.006	-	-
75 %		1.006	1.006	1.006	1.006	1.006	-	-
90 %		1.006	1.006	1.006	1.006	1.006	-	-
None	D3 ditch	**1.927**	0.499	0.259	0.175	0.132	-	-
50 %		0.962	0.249	0.129	0.087	0.066	-	-
75 %		0.481	0.124	0.065	0.044	0.033	-	-
90 %		0.192	0.050	0.026	0.017	0.013	-	-
None	D4 pond	0.106	0.099	0.088	0.082	0.078	-	-
50 %		0.095	0.079	0.074	0.071	0.069	-	-
75 %		0.077	0.070	0.067	0.066	0.065	-	-
90 %		0.067	0.064	0.063	0.063	0.062	-	-
None	D4 stream	**1.635**	0.577	0.393	0.393	0.393	-	-
50 %		**1.113**	0.393	0.393	0.393	0.393	-	-
75 %		0.556	0.393	0.393	0.393	0.393	-	-
90 %		0.393	0.393	0.393	0.393	0.393	-	-
None	D5 pond	0.105	0.090	0.064	0.051	0.042	-	-
50 %		0.080	0.045	0.032	0.025	0.021	-	-
75 %		0.040	0.023	0.016	0.013	0.011	-	-
90 %		0.016	0.010	0.009	0.009	0.008	-	-
None	D5 stream	1.764	0.623	0.323	0.218	0.164	-	-
50 %		1.201	0.311	0.161	0.109	0.085	-	-
75 %		0.600	0.155	0.085	0.085	0.085	-	-
90 %		0.240	0.085	0.085	0.085	0.085	-	-
None	R1 pond	0.290	0.286	0.278	0.273	0.271	0.124	0.065
50 %		0.283	0.272	0.268	0.266	0.264	0.114	0.058

75 %		0.270	0.265	0.263	0.262	0.261	0.109	0.055
90 %		0.263	0.261	0.260	0.259	0.259	0.106	0.053
None	R1 stream	**1.436**	**1.436**	**1.436**	**1.436**	**1.436**	0.640	0.333
50 %		**1.436**	**1.436**	**1.436**	**1.436**	**1.436**	0.640	0.333
75 %		**1.436**	**1.436**	**1.436**	**1.436**	**1.436**	0.640	0.333
90 %		**1.436**	**1.436**	**1.436**	**1.436**	**1.436**	0.640	0.333
None	R3 stream	1.748	1.500	1.500	1.500	1.500	0.683	0.358
50 %		1.500	1.500	1.500	1.500	1.500	0.683	0.358
75 %		1.500	1.500	1.500	1.500	1.500	0.683	0.358
90 %		1.500	1.500	1.500	1.500	1.500	0.683	0.358

PEC: Predicted environmental concentration; RAC: Regulatory acceptable concentration; PEC/RAC ratios above the relevant trigger of 1 are shown in bold

Table 9.5-12: Aquatic organisms: PEC_{SW} (µg/L) calculation and acceptability of risk (PEC/RAC < 1) for Difenoconazole based on FOCUS Step 4 calculations and toxicity data for Fish prolonged (*Pimephales promelas)* with mitigation of spray drift and run-off for the use of GLOB1911F in Winter oilseed rape – First application: autumn - single application

Intended use		Winter oilseed rape						
Active substance		Difenoconazole						
Application rate (kg/ha)		1 × 0.125 kg a.s./ha						
Nozzle reduction	**No-spray buffer (m)**	FOCUS default	5	10	15	20	10	20
	Vegetated filter strip (m)	None	None	None	None	None	10	20
None	D2 ditch	0.809	0.228	0.197	0.197	0.197	-	-
50 %		0.410	0.197	0.197	0.197	0.197	-	-
75 %		0.211	0.197	0.197	0.197	0.197	-	-
90 %		0.197	0.197	0.197	0.197	0.197	-	-
None	D2 stream	0.712	0.262	0.140	0.125	0.125	-	-

50 %		0.481	0.132	0.125	0.125	0.125	-	-
75 %		0.241	0.125	0.125	0.125	0.125	-	-
90 %		0.125	0.125	0.125	0.125	0.125	-	-
None	D3 ditch	0.790	0.214	0.113	0.077	0.059	-	-
50 %		0.395	0.107	0.057	0.039	0.029	-	-
75 %		0.197	0.053	0.028	0.019	0.015	-	-
90 %		0.079	0.021	0.011	0.008	0.006	-	-
None	D4 pond	0.027	0.023	0.017	0.013	0.012	-	-
50 %		0.020	0.012	0.011	0.010	0.010	-	-
75 %		0.011	0.010	0.010	0.009	0.009	-	-
90 %		0.009	0.009	0.009	0.009	0.009	-	-
None	D4 stream	0.681	0.248	0.132	0.090	0.068	-	-
50 %		0.459	0.124	0.066	0.058	0.058	-	-
75 %		0.229	0.062	0.058	0.058	0.058	-	-
90 %		0.092	0.058	0.058	0.058	0.058	-	-
None	D5 pond	0.027	0.023	0.017	0.013	0.011	-	-
50 %		0.020	0.012	0.008	0.007	0.006	-	-
75 %		0.010	0.006	0.004	0.003	0.003	-	-
90 %		0.004	0.002	0.002	0.001	0.001	-	-
None	D5 stream	0.734	0.268	0.142	0.097	0.074	-	-
50 %		0.495	0.134	0.071	0.048	0.037	-	-
75 %		0.247	0.067	0.035	0.024	0.018	-	-
90 %		0.099	0.027	0.014	0.011	0.011	-	-
None	R1 pond	0.049	0.048	0.046	0.046	0.045	0.021	0.013
50 %		0.047	0.045	0.044	0.044	0.044	0.019	0.010

75 %		0.045	0.044	0.043	0.043	0.043	0.018	0.009
90 %		0.043	0.043	0.043	0.043	0.043	0.018	0.009
None	R1 stream	0.520	0.232	0.232	0.232	0.232	0.103	0.054
50 %		0.351	0.232	0.232	0.232	0.232	0.103	0.054
75 %		0.232	0.232	0.232	0.232	0.232	0.103	0.054
90 %		0.232	0.232	0.232	0.232	0.232	0.103	0.054
None	R3 stream	0.728	0.271	0.271	0.271	0.271	0.141	0.073
50 %		0.490	0.271	0.271	0.271	0.271	0.123	0.064
75 %		0.271	0.271	0.271	0.271	0.271	0.123	0.064
90 %		0.271	0.271	0.271	0.271	0.271	0.123	0.064
RAC (µg/L) 0.36		**PEC/RAC ratio**						
None	D2 ditch	2.247	0.632	0.546	0.546	0.546	-	-
50 %		1.140	0.546	0.546	0.546	0.546	-	-
75 %		0.586	0.546	0.546	0.546	0.546	-	-
90 %		0.546	0.546	0.546	0.546	0.546	-	-
None	D2 stream	1.978	0.726	0.389	0.347	0.347	-	-
50 %		1.335	0.367	0.347	0.347	0.347	-	-
75 %		0.671	0.347	0.347	0.347	0.347	-	-
90 %		0.347	0.347	0.347	0.347	0.347	-	-
None	D3 ditch	**2.196**	0.594	0.315	0.215	0.164	-	-
50 %		**1.098**	0.297	0.157	0.107	0.082	-	-
75 %		0.548	0.148	0.079	0.054	0.041	-	-
90 %		0.219	0.059	0.031	0.021	0.016	-	-
None	D4 pond	0.075	0.065	0.047	0.037	0.033	-	-

50 %		0.056	0.033	0.030	0.029	0.028	-	-
75 %		0.032	0.028	0.026	0.026	0.025	-	-
90 %		0.026	0.025	0.024	0.024	0.024	-	-
None	D4 stream	**1.891**	0.690	0.366	0.250	0.190	-	-
50 %		**1.274**	0.345	0.183	0.161	0.161	-	-
75 %		0.636	0.172	0.161	0.161	0.161	-	-
90 %		0.254	0.161	0.161	0.161	0.161	-	-
None	D5 pond	0.075	0.065	0.047	0.037	0.031	-	-
50 %		0.056	0.038	0.023	0.019	0.016	-	-
75 %		0.028	0.016	0.012	0.009	0.008	-	-
90 %		0.011	0.007	0.005	0.004	0.003	-	-
None	D5 stream	2.040	0.744	0.394	0.269	0.205	-	-
50 %		1.374	0.372	0.197	0.134	0.102	-	-
75 %		0.686	0.186	0.098	0.067	0.051	-	-
90 %		0.274	0.074	0.039	0.030	0.030	-	-
None	R1 pond	0.136	0.133	0.129	0.127	0.125	0.059	0.037
50 %		0.131	0.126	0.123	0.122	0.122	0.053	0.027
75 %		0.125	0.122	0.121	0.120	0.120	0.050	0.026
90 %		0.121	0.119	0.119	0.119	0.119	0.049	0.024
None	R1 stream	**1.445**	0.644	0.644	0.644	0.644	0.287	0.149
50 %		0.974	0.644	0.644	0.644	0.644	0.287	0.149
75 %		0.644	0.644	0.644	0.644	0.644	0.287	0.149
90 %		0.644	0.644	0.644	0.644	0.644	0.287	0.149
None	R3 stream	2.021	0.751	0.751	0.751	0.751	0.391	0.208
50 %		1.362	0.751	0.751	0.751	0.751	0.342	0.179

75 %		0.751	0.751	0.751	0.751	0.751	0.342	0.179
90 %		0.751	0.751	0.751	0.751	0.751	0.342	0.179

PEC: Predicted environmental concentration; RAC: Regulatory acceptable concentration; PEC/RAC ratios above the relevant trigger of 1 are shown in bold

Table 9.5-13: Aquatic organisms: PEC_{SW} (µg/L) calculation and acceptability of risk (PEC/RAC < 1) for Difenoconazole based on FOCUS Step 4 calculations and toxicity data for Fish prolonged (*Pimephales promelas)* with mitigation of spray drift and run-off for the use of GLOB1911F in Winter oilseed rape – First application: spring - multiple applications

Intended use		Winter oilseed rape						
Active substance		Difenoconazole						
Application rate (kg/ha)		2 × 0.125 kg a.s./ha						
Nozzle reduction	**No-spray buffer (m)**	FOCUS default	5	10	15	20	10	20
	Vegetated filter strip (m)	None	None	None	None	None	10	20
None	D2 ditch	0.975	0.253	0.228	0.228	0.228	-	-
50 %		0.486	0.228	0.228	0.228	0.228	-	-
75 %		0.244	0.228	0.228	0.228	0.228	-	-
90 %		0.228	0.228	0.228	0.228	0.228	-	-
None	D2 stream	0.624	0.221	0.143	0.143	0.143	-	-
50 %		0.425	0.143	0.143	0.143	0.143	-	-
75 %		0.213	0.143	0.143	0.143	0.143	-	-
90 %		0.143	0.143	0.143	0.143	0.143	-	-
None	D3 ditch	0.691	0.179	0.093	0.063	0.047	-	-
50 %		0.345	0.089	0.046	0.031	0.024	-	-
75 %		0.172	0.045	0.023	0.016	0.012	-	-
90 %		0.069	0.018	0.009	0.006	0.005	-	-
None	D4 pond	0.036	0.031	0.022	0.017	0.015	-	-

50 %		0.028	0.016	0.011	0.009	0.007	-	-
75 %		0.014	0.008	0.006	0.006	0.006	-	-
90 %		0.006	0.006	0.005	0.005	0.005	-	-
None	D4 stream	0.589	0.208	0.108	0.073	0.055	-	-
50 %		0.401	0.104	0.054	0.036	0.034	-	-
75 %		0.200	0.052	0.034	0.034	0.034	-	-
90 %		0.080	0.034	0.034	0.034	0.034	-	-
None	D5 pond	0.037	0.031	0.022	0.018	0.015	-	-
50 %		0.028	0.016	0.011	0.009	0.007	-	-
75 %		0.014	0.008	0.006	0.004	0.004	-	-
90 %		0.006	0.003	0.002	0.002	0.002	-	-
None	D5 stream	0.635	0.224	0.116	0.078	0.059	-	-
50 %		0.432	0.112	0.058	0.039	0.030	-	-
75 %		0.216	0.056	0.029	0.020	0.015	-	-
90 %		0.086	0.022	0.012	0.011	0.011	-	-
None	R1 pond	0.088	0.085	0.079	0.076	0.074	0.040	0.022
50 %		0.083	0.075	0.072	0.071	0.070	0.033	0.018
75 %		0.074	0.070	0.069	0.068	0.068	0.030	0.015
90 %		0.069	0.067	0.067	0.066	0.066	0.028	0.014
None	R1 stream	0.445	0.442	0.442	0.442	0.442	0.201	0.105
50 %		0.442	0.442	0.442	0.442	0.442	0.201	0.105
75 %		0.442	0.442	0.442	0.442	0.442	0.201	0.105
90 %		0.442	0.442	0.442	0.442	0.442	0.201	0.105
None	R3 stream	0.633	0.334	0.334	0.334	0.334	0.151	0.079
50 %		0.431	0.334	0.334	0.334	0.334	0.151	0.079

75 %		0.334	0.334	0.334	0.334	0.334	0.151	0.079
90 %		0.334	0.334	0.334	0.334	0.334	0.151	0.079
RAC (µg/L) 0.36		**PEC/RAC ratio**						
None	D2 ditch	2.709	0.703	0.633	0.633	0.633	-	-
50 %		1.349	0.633	0.633	0.633	0.633	-	-
75 %		0.677	0.633	0.633	0.633	0.633	-	-
90 %		0.633	0.633	0.633	0.633	0.633	-	-
None	D2 stream	1.734	0.614	0.398	0.398	0.398	-	-
50 %		1.181	0.398	0.398	0.398	0.398	-	-
75 %		0.592	0.398	0.398	0.398	0.398	-	-
90 %		0.398	0.398	0.398	0.398	0.398	-	-
None	D3 ditch	**1.918**	0.497	0.258	0.174	0.131	-	-
50 %		0.958	0.248	0.129	0.087	0.065	-	-
75 %		0.479	0.124	0.064	0.043	0.033	-	-
90 %		0.191	0.050	0.026	0.017	0.013	-	-
None	D4 pond	0.101	0.087	0.061	0.048	0.040	-	-
50 %		0.077	0.043	0.031	0.024	0.020	-	-
75 %		0.038	0.021	0.017	0.016	0.016	-	-
90 %		0.017	0.015	0.015	0.015	0.015	-	-
None	D4 stream	**1.635**	0.577	0.299	0.202	0.152	-	-
50 %		**1.113**	0.288	0.150	0.101	0.095	-	-
75 %		0.556	0.144	0.095	0.095	0.095	-	-
90 %		0.222	0.095	0.095	0.095	0.095	-	-
None	D5 pond	0.102	0.087	0.062	0.049	0.041	-	-

50 %		0.078	0.044	0.031	0.024	0.020	-	-
75 %		0.039	0.022	0.016	0.012	0.010	-	-
90 %		0.016	0.009	0.006	0.005	0.004	-	-
None	D5 stream	1.764	0.623	0.323	0.218	0.164	-	-
50 %		1.200	0.311	0.161	0.109	0.082	-	-
75 %		0.600	0.155	0.081	0.054	0.041	-	-
90 %		0.240	0.062	0.032	0.030	0.030	-	-
None	R1 pond	0.245	0.236	0.220	0.212	0.207	0.111	0.061
50 %		0.230	0.208	0.200	0.196	0.194	0.092	0.049
75 %		0.205	0.195	0.191	0.189	0.188	0.082	0.042
90 %		0.191	0.187	0.185	0.184	0.184	0.076	0.039
None	R1 stream	**1.235**	**1.229**	**1.229**	**1.229**	**1.229**	0.559	0.293
50 %		**1.229**	**1.229**	**1.229**	**1.229**	**1.229**	0.559	0.293
75 %		**1.229**	**1.229**	**1.229**	**1.229**	**1.229**	0.559	0.293
90 %		**1.229**	**1.229**	**1.229**	**1.229**	**1.229**	0.559	0.293
None	R3 stream	1.758	0.927	0.927	0.927	0.927	0.420	0.220
50 %		1.197	0.927	0.927	0.927	0.927	0.420	0.220
75 %		0.927	0.927	0.927	0.927	0.927	0.420	0.220
90 %		0.927	0.927	0.927	0.927	0.927	0.420	0.220

PEC: Predicted environmental concentration; RAC: Regulatory acceptable concentration; PEC/RAC ratios above the relevant trigger of 1 are shown in bold

Table 9.5-14: Aquatic organisms: PEC_{SW} (µg/L) calculation and acceptability of risk (PEC/RAC < 1) for Difenoconazole based on FOCUS Step 4 calculations and toxicity data for Fish prolonged (*Pimephales promelas)* with mitigation of spray drift and run-off for the use of GLOB1911F in Winter oilseed rape – First application: spring - single application

Intended use	Winter oilseed rape
Active substance	Difenoconazole

Application rate (kg/ha)		1 × 0.125 kg a.s./ha						
Nozzle reduction	**No-spray buffer (m)**	FOCUS default	5	10	15	20	10	20
	Vegetated filter strip (m)	None	None	None	None	None	10	20
None	D2 ditch	0.797	0.216	0.121	0.121	0.121	-	-
50 %		0.399	0.121	0.121	0.121	0.121	-	-
75 %		0.200	0.121	0.121	0.121	0.121	-	-
90 %		0.121	0.121	0.121	0.121	0.121	-	-
None	D2 stream	0.689	0.252	0.133	0.091	0.076	-	-
50 %		0.464	0.126	0.076	0.076	0.076	-	-
75 %		0.232	0.076	0.076	0.076	0.076	-	-
90 %		0.093	0.076	0.076	0.076	0.076	-	-
None	D3 ditch	0.788	0.213	0.113	0.077	0.059	-	-
50 %		0.394	0.107	0.057	0.039	0.029	-	-
75 %		0.197	0.053	0.028	0.019	0.015	-	-
90 %		0.079	0.021	0.011	0.008	0.006	-	-
None	D4 pond	0.027	0.023	0.017	0.013	0.011	-	-
50 %		0.020	0.012	0.008	0.007	0.006	-	-
75 %		0.010	0.006	0.004	0.003	0.003	-	-
90 %		0.004	0.002	0.002	0.002	0.002	-	-
None	D4 stream	0.663	0.242	0.128	0.088	0.067	-	-
50 %		0.447	0.121	0.064	0.044	0.033	-	-
75 %		0.223	0.060	0.032	0.022	0.017	-	-
90 %		0.089	0.024	0.015	0.015	0.015	-	-
None	D5 pond	0.027	0.023	0.017	0.013	0.011	-	-
50 %		0.020	0.012	0.008	0.007	0.006	-	-

75 %		0.010	0.006	0.004	0.003	0.003	-	-
90 %		0.004	0.002	0.002	0.001	0.001	-	-
None	D5 stream	0.702	0.256	0.136	0.093	0.070	-	-
50 %		0.473	0.128	0.068	0.046	0.035	-	-
75 %		0.236	0.064	0.034	0.023	0.018	-	-
90 %		0.094	0.026	0.014	0.009	0.007	-	-
None	R1 pond	0.037	0.034	0.029	0.027	0.025	0.019	0.012
50 %		0.032	0.025	0.023	0.022	0.021	0.013	0.008
75 %		0.024	0.021	0.020	0.019	0.019	0.010	0.005
90 %		0.020	0.018	0.018	0.018	0.018	0.008	0.004
None	R1 stream	0.520	0.190	0.158	0.158	0.158	0.101	0.052
50 %		0.350	0.158	0.158	0.158	0.158	0.071	0.037
75 %		0.175	0.158	0.158	0.158	0.158	0.071	0.037
90 %		0.158	0.158	0.158	0.158	0.158	0.071	0.037
None	R3 stream	0.732	0.267	0.145	0.145	0.145	0.142	0.073
50 %		0.493	0.145	0.145	0.145	0.145	0.071	0.037
75 %		0.246	0.145	0.145	0.145	0.145	0.066	0.035
90 %		0.145	0.145	0.145	0.145	0.145	0.066	0.035
RAC (µg/L) 0.36		**PEC/RAC ratio**						
None	D2 ditch	2.213	0.601	0.335	0.335	0.335	-	-
50 %		1.108	0.335	0.335	0.335	0.335	-	-
75 %		0.554	0.335	0.335	0.335	0.335	-	-
90 %		0.335	0.335	0.335	0.335	0.335	-	-
None	D2 stream	1.914	0.699	0.370	0.253	0.211	-	-

50 %		1.290	0.349	0.211	0.211	0.211	-	-
75 %		0.644	0.211	0.211	0.211	0.211	-	-
90 %		0.257	0.211	0.211	0.211	0.211	-	-
None	D3 ditch	**2.190**	0.593	0.314	0.214	0.163	-	-
50 %		**1.095**	0.296	0.157	0.107	0.081	-	-
75 %		0.547	0.148	0.078	0.054	0.041	-	-
90 %		0.218	0.059	0.031	0.021	0.016	-	-
None	D4 pond	0.075	0.065	0.047	0.037	0.031	-	-
50 %		0.056	0.032	0.023	0.019	0.016	-	-
75 %		0.028	0.016	0.012	0.009	0.008	-	-
90 %		0.011	0.006	0.006	0.006	0.006	-	-
None	D4 stream	**1.842**	0.672	0.356	0.243	0.185	-	-
50 %		**1.241**	0.336	0.178	0.121	0.092	-	-
75 %		0.620	0.168	0.089	0.061	0.046	-	-
90 %		0.248	0.067	0.041	0.041	0.041	-	-
None	D5 pond	0.075	0.065	0.047	0.037	0.031	-	-
50 %		0.056	0.033	0.023	0.019	0.016	-	-
75 %		0.028	0.016	0.012	0.009	0.008	-	-
90 %		0.011	0.007	0.005	0.004	0.003	-	-
None	D5 stream	1.949	0.711	0.377	0.257	0.196	-	-
50 %		1.313	0.355	0.188	0.128	0.098	-	-
75 %		0.656	0.177	0.094	0.064	0.049	-	-
90 %		0.262	0.071	0.038	0.026	0.019	-	-
None	R1 pond	0.103	0.095	0.081	0.074	0.070	0.054	0.033
50 %		0.089	0.071	0.064	0.060	0.058	0.036	0.021

75 %		0.067	0.059	0.055	0.053	0.052	0.027	0.015
90 %		0.055	0.051	0.050	0.049	0.049	0.022	0.012
None	R1 stream	**1.443**	0.527	0.438	0.438	0.438	0.279	0.145
50 %		0.972	0.438	0.438	0.438	0.438	0.198	0.103
75 %		0.486	0.438	0.438	0.438	0.438	0.198	0.103
90 %		0.438	0.438	0.438	0.438	0.438	0.198	0.103
None	R3 stream	2.032	0.742	0.403	0.403	0.403	0.393	0.204
50 %		1.369	0.403	0.403	0.403	0.403	0.196	0.102
75 %		0.684	0.403	0.403	0.403	0.403	0.184	0.096
90 %		0.403	0.403	0.403	0.403	0.403	0.184	0.096

PEC: Predicted environmental concentration; RAC: Regulatory acceptable concentration; PEC/RAC ratios above the relevant trigger of 1 are shown in bold

Table 9.5-15: Aquatic organisms: PEC_{SW} (µg/L) calculation and acceptability of risk (PEC/RAC < 1) for Difenoconazole based on FOCUS Step 4 calculations and toxicity data for Fish prolonged (*Pimephales promelas)* with mitigation of spray drift and run-off for the use of GLOB1911F in Spring oilseed rape -multiple applications

Intended use **Active substance** **Application rate (kg/ha)**		Spring oilseed rape Difenoconazole 2 × 0.125 kg a.s./ha						
Nozzle reduction	**No-spray buffer (m)**	FOCUS default	5	10	15	20	10	20
	Vegetated filter strip (m)	None	None	None	None	None	10	20
None	D1 ditch	0.857	0.218	0.113	0.075	0.057	0.113	0.057
50 %		0.424	0.108	0.056	0.051	0.051	0.056	0.051
75 %		0.210	0.054	0.051	0.051	0.051	0.051	0.051
90 %		0.083	0.051	0.051	0.051	0.051	0.051	0.051
None	D1 stream	0.602	0.213	0.110	0.074	0.056	0.110	0.056

50 %		0.410	0.106	0.055	0.037	0.033	0.055	0.038
75 %		0.205	0.053	0.033	0.033	0.033	0.033	0.033
90 %		0.082	0.033	0.033	0.033	0.033	0.033	0.033
None	D3 ditch	0.693	0.180	0.093	0.063	0.047	0.093	0.047
50 %		0.346	0.090	0.047	0.031	0.024	0.047	0.024
75 %		0.173	0.045	0.023	0.016	0.012	0.023	0.012
90 %		0.069	0.018	0.009	0.006	0.005	0.009	0.005
None	D4 pond	0.037	0.032	0.023	0.018	0.015	0.023	0.015
50 %		0.028	0.016	0.011	0.009	0.009	0.011	0.009
75 %		0.014	0.009	0.009	0.008	0.008	0.009	0.008
90 %		0.009	0.008	0.008	0.008	0.008	0.008	0.008
None	D4 stream	0.589	0.208	0.108	0.073	0.055	0.108	0.055
50 %		0.401	0.104	0.054	0.050	0.050	0.054	0.050
75 %		0.200	0.052	0.050	0.050	0.050	0.050	0.050
90 %		0.080	0.050	0.050	0.050	0.050	0.050	0.050
None	D5 pond	0.038	0.032	0.023	0.018	0.015	0.023	0.015
50 %		0.029	0.016	0.012	0.009	0.008	0.012	0.008
75 %		0.014	0.008	0.006	0.005	0.004	0.006	0.004
90 %		0.006	0.003	0.002	0.002	0.002	0.002	0.002
None	D5 stream	0.635	0.224	0.116	0.078	0.059	0.116	0.059
50 %		0.432	0.112	0.058	0.039	0.030	0.058	0.030
75 %		0.216	0.056	0.029	0.020	0.016	0.029	0.016
90 %		0.086	0.022	0.016	0.016	0.016	0.016	0.016
None	R1 pond	0.093	0.092	0.091	0.090	0.090	0.039	0.020
50 %		0.091	0.090	0.089	0.089	0.089	0.037	0.019

75 %		0.090	0.089	0.088	0.088	0.088	0.037	0.018
90 %		0.088	0.088	0.088	0.088	0.088	0.036	0.018
None	R1 stream	0.450	0.318	0.318	0.318	0.318	0.143	0.075
50 %		0.318	0.318	0.318	0.318	0.318	0.143	0.075
75 %		0.318	0.318	0.318	0.318	0.318	0.143	0.075
90 %		0.318	0.318	0.318	0.318	0.318	0.143	0.075
RAC (µg/L) 0.36		**PEC/RAC ratio**						
None	D2 ditch	2.379	0.607	0.313	0.210	0.157	-	-
50 %		1.179	0.301	0.155	0.142	0.142	-	-
75 %		0.584	0.149	0.142	0.142	0.142	-	-
90 %		0.231	0.142	0.142	0.142	0.142	-	-
None	D2 stream	1.673	0.591	0.306	0.207	0.156	-	-
50 %		1.139	0.295	0.153	0.103	0.092	-	-
75 %		0.569	0.147	0.092	0.092	0.092	-	-
90 %		0.227	0.092	0.092	0.092	0.092	-	-
None	D3 ditch	**1.925**	0.499	0.259	0.174	0.131	-	-
50 %		0.961	0.249	0.129	0.087	0.066	-	-
75 %		0.480	0.124	0.065	0.043	0.033	-	-
90 %		0.192	0.050	0.026	0.017	0.013	-	-
None	D4 pond	0.104	0.089	0.063	0.050	0.041	-	-
50 %		0.079	0.044	0.031	0.026	0.025	-	-
75 %		0.039	0.026	0.024	0.023	0.023	-	-
90 %		0.024	0.023	0.022	0.022	0.022	-	-
None	D4 stream	**1.635**	0.577	0.299	0.202	0.152	-	-

50 %		**1.113**	0.288	0.150	0.140	0.140	-	-
75 %		0.556	0.144	0.140	0.140	0.140	-	-
90 %		0.222	0.140	0.140	0.140	0.140	-	-
None	D5 pond	0.105	0.090	0.064	0.051	0.042	-	-
50 %		0.080	0.045	0.032	0.025	0.021	-	-
75 %		0.040	0.023	0.016	0.013	0.011	-	-
90 %		0.016	0.009	0.007	0.005	0.005	-	-
None	D5 stream	1.764	0.623	0.323	0.218	0.164	-	-
50 %		1.201	0.311	0.161	0.109	0.082	-	-
75 %		0.600	0.155	0.081	0.054	0.043	-	-
90 %		0.240	0.062	0.043	0.043	0.043	-	-
None	R1 pond	0.257	0.255	0.252	0.250	0.249	0.108	0.055
50 %		0.254	0.249	0.248	0.247	0.246	0.104	0.053
75 %		0.249	0.246	0.246	0.245	0.245	0.102	0.051
90 %		0.246	0.245	0.244	0.244	0.244	0.100	0.050
None	R1 stream	**1.251**	0.882	0.882	0.882	0.882	0.398	0.208
50 %		0.882	0.882	0.882	0.882	0.882	0.398	0.208
75 %		0.882	0.882	0.882	0.882	0.882	0.398	0.208
90 %		0.882	0.882	0.882	0.882	0.882	0.398	0.208

PEC: Predicted environmental concentration; RAC: Regulatory acceptable concentration; PEC/RAC ratios above the relevant trigger of 1 are shown in bold

Table 9.5-16: Aquatic organisms: PEC_{SW} (µg/L) calculation and acceptability of risk (PEC/RAC < 1) for Difenoconazole based on FOCUS Step 4 calculations and toxicity data for Fish prolonged (*Pimephales promelas)* with mitigation of spray drift and run-off for the use of GLOB1911F in Spring oilseed rape - single application

Intended use	Spring oilseed rape
Active substance	Difenoconazole

Application rate (kg/ha)		1 × 0.125 kg a.s./ha						
Nozzle reduction	**No-spray buffer (m)**	FOCUS default	5	10	15	20	10	20
	Vegetated filter strip (m)	None	None	None	None	None	10	20
None	D1 ditch	0.796	0.216	0.114	0.078	0.059	-	-
50 %		0.398	0.108	0.057	0.039	0.030	-	-
75 %		0.199	0.054	0.029	0.019	0.015	-	-
90 %		0.079	0.021	0.013	0.013	0.013	-	-
None	D1 stream	0.697	0.254	0.135	0.092	0.070	-	-
50 %		0.469	0.127	0.067	0.046	0.035	-	-
75 %		0.234	0.063	0.034	0.023	0.017	-	-
90 %		0.094	0.025	0.013	0.009	0.009	-	-
None	D3 ditch	0.790	0.214	0.113	0.077	0.059	-	-
50 %		0.395	0.107	0.057	0.039	0.029	-	-
75 %		0.197	0.053	0.028	0.019	0.015	-	-
90 %		0.079	0.021	0.011	0.008	0.006	-	-
None	D4 pond	0.027	0.023	0.017	0.013	0.011	-	-
50 %		0.020	0.012	0.008	0.007	0.006	-	-
75 %		0.010	0.006	0.004	0.003	0.003	-	-
90 %		0.004	0.003	0.003	0.003	0.003	-	-
None	D4 stream	0.681	0.248	0.132	0.090	0.068	-	-
50 %		0.459	0.124	0.066	0.045	0.034	-	-
75 %		0.229	0.062	0.033	0.022	0.017	-	-
90 %		0.092	0.025	0.017	0.017	0.017	-	-
None	D5 pond	0.027	0.023	0.017	0.013	0.011	-	-
50 %		0.020	0.012	0.008	0.007	0.006	-	-

75 %		0.010	0.006	0.004	0.003	0.003	-	-
90 %		0.004	0.002	0.002	0.001	0.001	-	-
None	D5 stream	0.734	0.268	0.142	0.097	0.074	-	-
50 %		0.495	0.134	0.071	0.048	0.037	-	-
75 %		0.247	0.067	0.035	0.024	0.018	-	-
90 %		0.099	0.027	0.014	0.010	0.007	-	-
None	R1 pond	0.044	0.043	0.043	0.042	0.042	0.019	0.012
50 %		0.043	0.042	0.042	0.042	0.042	0.018	0.009
75 %		0.042	0.042	0.042	0.041	0.041	0.017	0.009
90 %		0.042	0.041	0.041	0.041	0.041	0.017	0.008
None	R1 stream	0.520	0.190	0.146	0.146	0.146	0.101	0.052
50 %		0.350	0.146	0.146	0.146	0.146	0.066	0.035
75 %		0.175	0.146	0.146	0.146	0.146	0.066	0.035
90 %		0.146	0.146	0.146	0.146	0.146	0.066	0.035
RAC (µg/L) 0.36		**PEC/RAC ratio**						
None	D2 ditch D1 ditch	2.212	0.599	0.317	0.217	0.165	-	-
50 %		1.106	0.299	0.159	0.108	0.082	-	-
75 %		0.552	0.150	0.079	0.054	0.041	-	-
90 %		0.221	0.060	0.037	0.037	0.037	-	-
None	D2 stream D1 stream	1.935	0.706	0.374	0.255	0.194	-	-
50 %		1.304	0.353	0.187	0.128	0.097	-	-
75 %		0.651	0.176	0.093	0.064	0.048	-	-
90 %		0.260	0.070	0.037	0.025	0.024	-	-
None	D3 ditch	**2.194**	0.594	0.315	0.215	0.163	-	-

50 %		**1.097**	0.297	0.157	0.107	0.082	-	-
75 %		0.548	0.148	0.079	0.054	0.041	-	-
90 %		0.219	0.059	0.031	0.021	0.016	-	-
None	D4 pond	0.075	0.065	0.047	0.037	0.031	-	-
50 %		0.056	0.032	0.023	0.019	0.016	-	-
75 %		0.028	0.016	0.012	0.009	0.008	-	-
90 %		0.011	0.008	0.008	0.007	0.007	-	-
None	D4 stream	**1.891**	0.690	0.366	0.250	0.190	-	-
50 %		**1.274**	0.345	0.183	0.125	0.095	-	-
75 %		0.636	0.172	0.091	0.062	0.047	-	-
90 %		0.254	0.069	0.047	0.047	0.047	-	-
None	D5 pond	0.075	0.065	0.047	0.037	0.031	-	-
50 %		0.056	0.033	0.023	0.019	0.016	-	-
75 %		0.028	0.016	0.012	0.009	0.008	-	-
90 %		0.011	0.007	0.005	0.004	0.003	-	-
None	D5 stream	2.089	0.744	0.394	0.269	0.205	-	-
50 %		1.374	0.372	0.197	0.134	0.102	-	-
75 %		0.686	0.186	0.098	0.067	0.051	-	-
90 %		0.274	0.074	0.039	0.027	0.020	-	-
None	R1 pond	0.122	0.121	0.119	0.118	0.117	0.053	0.033
50 %		0.120	0.117	0.117	0.116	0.116	0.049	0.025
75 %		0.117	0.116	0.115	0.115	0.115	0.048	0.024
90 %		0.115	0.115	0.115	0.115	0.114	0.047	0.024
None	R1 stream	**1.444**	0.527	0.406	0.406	0.406	0.279	0.145
50 %		0.973	0.406	0.406	0.406	0.406	0.184	0.096

75 %		0.486	0.406	0.406	0.406	0.406	0.184	0.096
90 %		0.406	0.406	0.406	0.406	0.406	0.184	0.096

PEC: Predicted environmental concentration; RAC: Regulatory acceptable concentration; PEC/RAC ratios above the relevant trigger of 1 are shown in bold

Metabolites of Difenoconazole

Risk assessment for the metabolites CGA71019 and CGA205375 was also performed by taking the highest PEC_{sw} and $PEC_{sed,\ accu}$ values resulting from the critical intended GAP. The highest PEC values were obtained after four applications of GLOB1911F on potato and were used to calculate the PEC/RAC ratios (see dRR Part B Section 8).

Table 9.5-17: Aquatic organisms: acceptability of risk (PEC/RAC < 1) for Difenoconazole metabolite CGA71019 for each organism group based on FOCUS Steps 1 calculation after use of GLOB1911F

Group		**Fish acute**	**Fish prolonged**	**Inverteb. acute**	**Algae**
Test species		***Oncorhynchus mykiss***	***Oncorhynchus mykiss***	***Daphnia magna***	***Pseudokirchneriella subcapitata***
Endpoint		LC_{50}	NOEC	EC_{50}	E_rC_{50}
(µg/L)		498000	3200	100000	31000
AF		100	10	100	10
RAC (µg/L)		4980	320	1000	3100
FOCUS Scenario	**PEC $_{sw\text{-}max}$ (µg/L)**				
Step 1					
	8.4847	0.002	0.027	0.008	0.003

Table 9.5-18: Aquatic organisms: acceptability of risk (PEC/RAC < 1) for Difenoconazole metabolite CGA205375 for each organism group based on FOCUS Steps 1 calculation after use of GLOB1911F

Group		**Fish acute**	**Inverteb. acute**	**Algae**	**Sed. dwell. prolonged**		**Sed. dwell. prolonged**
Test species		***Oncorhynchus mykiss***	***Daphnia magna***	***Pseudokirchneriella subcapitata***	***Chironomus riparius***		***Chironomus riparius***

Group		**Fish acute**	**Inverteb. acute**	**Algae**	**Sed. dwell. prolonged**		**Sed. dwell. prolonged**
Endpoint		LC_{50}	EC_{50}	E_rC_{50}	NOEC		NOEC
(µg/L)		740	1400	3100	400		10000
AF		100	100	10	10		10
RAC (µg/L)		7.4	14	310	40	**RAC (µg/kg)**	1000
FOCUS Scenario	**PEC $_{sw-max}$ (µg/L)**					**PEC$_{-SED, ACCU}$ (µg/kg)**	
Step 1							
	7.8780	1.065	0.563	0.025	0.197	476.5174	0.477

Risk for formulation GLOB1911F

According to the EFSA "Guidance on tiered risk assessment for plant protection products for aquatic organisms in edge-of-field surface waters", the risk assessment of the PPP should (in accordance with Commission Regulation (EU) No 284/2013) be based on the lower of the two NOEC/EC_{50} values (i.e. either a.s. data or formulation data are used) when toxicity data are compared between the a.s. and formulated product.

When the endpoints of the algae study on the formulated product GLOB1911F (expressed in mg a.s./L) are compared to the respective endpoint on the active substance Difenoconazole, it is observed that the formulated product is less toxic than the active substance. Therefore, the risk assessment on algae for the formulated product is covered by the active substance risk assessment above. No new risk assessment is performed for the formulated product for these species.

Summary table of mitigation measures

In the table below an overall summary is given for the mitigation measures needed for each relevant FOCUS scenario (D3, D4, R1) in order to have an acceptable risk (PEC/RAC < 1).

Intended Crop	Focus Scenario	Mitigation measure for acceptable risk to aquatic organisms (except sediment dwellers)	Mitigation measure for acceptable risk to sediment dwellers	Overall mitigation measures when D3, D4, R1 relevant
Potato	D3 ditch	50% drift reduction Or 5m NSB	-	10m VFS + 10 m NSB
	D4 pond	-	-	
	D4 stream	50% drift reduction Or 5m NSB	-	
	R1 pond	-	-	
	R1 stream	10m VFS + 10 m NSB	-	
Sugar beet	D3 ditch	75% drift reduction Or 5m NSB	-	10m VFS + 10 m NSB
	D4 pond	-	-	
	D4 stream	75% drift reduction Or 5m NSB	-	
	R1 pond	-	-	
	R1 stream	10m VFS + 10 m NSB	-	
Winter oilseed rape	D3 ditch	50% drift reduction Or 5m NSB	-	10m VFS + 10 m NSB
	D4 pond	-	-	
	D4 stream	75% drift reduction Or 5m NSB	-	
	R1 pond	-	-	
	R1 stream	10m VFS + 10 m NSB	-	
Spring oilseed rape	D3 ditch	50% drift reduction Or 5m NSB	-	10m VFS + 10 m NSB
	D4 pond	-	-	
	D4 stream	75% drift reduction Or 5m NSB	-	
	R1 pond	-	-	
	R1 stream	10m VFS + 10 m NSB	-	

NSB= No-spray buffer, VFS= vegetated filter strip

~~A second possibility the applicant proposes, is to not take into account the R scenarios in the risk assessment by putting the restriction sentence "To protect aquatic organisms from run-off in surface water do not apply on run-off endangered areas". Then, the risk assessment only considers the D scenarios and mitigation for spray drift is considered only (avoiding run-off mitigation with a vegetative buffer zone).~~

~~Intended Crop~~	~~Focus Scenario~~	~~Mitigation measure for acceptable risk to aquatic organisms (except sediment dwellers)~~	~~Mitigation measure for acceptable risk to sediment dwellers~~	~~Overall mitigation measures when D3, D4 relevant~~
~~Potato~~	~~D3 ditch~~	~~50% drift reduction Or 5m NSB~~	~~-~~	~~50% drift reduction Or 5m NSB~~
	~~D4 pond~~	~~-~~	~~-~~	
	~~D4 stream~~	~~50% drift reduction Or 5m NSB~~	~~-~~	
~~Sugar beet~~	~~D3 ditch~~	~~75% drift reduction Or 5m NSB~~	~~-~~	~~75% drift reduction Or 5m NSB~~
	~~D4 pond~~	~~-~~	~~-~~	
	~~D4 stream~~	~~75% drift reduction Or 5m NSB~~	~~-~~	
~~Winter oilseed rape~~	~~D3 ditch~~	~~50% drift reduction Or 5m NSB~~	~~-~~	~~75% drift reduction Or 5m NSB~~
	~~D4 pond~~	~~-~~	~~-~~	
	~~D4 stream~~	~~75% drift reduction Or 5m NSB~~	~~-~~	
~~Spring oilseed rape~~	~~D3 ditch~~	~~50% drift reduction Or 5m NSB~~	~~-~~	~~75% drift reduction Or 5m NSB~~
	~~D4 pond~~	~~-~~	~~-~~	
	~~D4 stream~~	~~75% drift reduction Or 5m NSB~~	~~-~~	

~~NSB= No spray buffer, VFS= vegetated filter strip~~

9.5.3 Overall conclusions

Based on the risk assessment, an acceptable risk was identified for all aquatic organisms for the intended uses when the following risk mitigation measures are taken into account:

Potato 4 x 0.125 kg a.s./ha:
- 10m vegetated buffer strip and 10 m non sprayed buffer zone

Sugar beet 3 x 0.125 kg a.s./ha:
- 10m vegetated buffer strip and 10 m non sprayed buffer zone

Winter oilseed rape 2 x 0.125 kg a.s./ha:
- 10m vegetated buffer strip and 10 m non sprayed buffer zone

Spring oilseed rape 2 x 0.125 kg a.s./ha:
- 10m vegetated buffer strip and 10 m non sprayed buffer zone

~~A second possibility the applicant proposes, is to mention restriction sentence "To protect aquatic organisms from run-off in surface water do not apply on run-off endangered areas" on the label and following mitigation measures.~~

~~Potato 4 x 0.125 kg a.s./ha:~~
- ~~50% drift reducing nozzles~~
  ~~Or~~
- ~~5m no-spray bufferzone~~

~~Sugar beet 2 x 0.125 kg a.s./ha:~~
- ~~75% drift reducing nozzles~~
  ~~Or~~
- ~~5m no-spray bufferzone~~

~~Winter oilseed rape 2 x 0.125 kg a.s./ha:~~
- ~~75% drift reducing nozzles~~
  ~~Or~~
- ~~5m no-spray bufferzone~~

~~Spring oilseed rape 2 x 0.125 kg a.s./ha:~~
- ~~75% drift reducing nozzles~~
  ~~Or~~
- ~~5m no-spray bufferzone~~

9.6 Effects on bees (KCP 10.3.1)

zRMS Comments:	The submitted risk assessment is based on SANCO guidance (2002) and new EU guidance (2013). The EU agreed endpoints for active substance were used in risk assessment. New studies for acute and chronic toxicity were submitted and accepted. The acute risk assessment performed in accordance with the SANCO guidance presented by the Applicant was accepted. The risk envelope approach – the maximum application rate of 125 g a.s./ha and 288.3 g/ha for active substance and formulation, respectively, was considered. The chronic risk assessment performed in accordance with EPPO scheme (2010) was submitted and accepted. The justification on non-submission the risk assessment in accordance with EFSA guidance (2013) was accepted. Its relevance will be decided at the Member State level. The hazard quotients are below the trigger value, indicating that the active substance and formulation pose an acceptable acute and chronic risk to bees. Therefore, an acceptable risk to bees is expected from the application of GLOB1911F in accordance with proposed use pattern.

9.6.1 Toxicity data

Studies on the toxicity to bees have been carried out with Difenoconazole. Full details of these studies are provided in the respective EU DAR and related documents.

Effects on bees of GLOB1911F were not evaluated as part of the EU review of Difenoconazole. Therefore, testing for effects of GLOB1911F on bees was carried out. New data submitted with this application are listed in Appendix 1 and summarised in Appendix 2.

The selection of studies and endpoints for the risk assessment is in line with the results of the EU review process.

Table 9.6-1: Endpoints and effect values relevant for the risk assessment for bees

Species	Substance	Exposure System	Results	Reference
Apis mellifera	Difenoconazole	Oral, 48h	LD_{50} > 177 µg a.s./bee	***EFSA, 2011***
		Contact, 48h	LD_{50} > 100 µg a.s./bee	***EFSA, 2011***
	GLOB1911F	Oral, 48h	LD_{50} = 221.2 µg FP/bee (= 100.0 µg a.s./bee)	***Franke M., 2020 20 48 BAA 0011***
		Contact, 48h	LD_{50} > 221.2µg FP/bee (>100.0 µg a.s./bee)	
		Adult, oral, 10 d	LDD_{50} = 65.8 µg product/bee/day (= 28.5 µg a.s./bee/day) NOEDD = 19.5 µg product/bee/day (= 8.47 µg a.s./bee/day) NOEC = 0.808 g product/kg food (0.350 g a.s./ kg food)	***Dreßler K., 2020 20 48 BAC 0003***
		Larval, oral, 22 d	ED_{50} = 56.8 µg product/larva NOED = 17.8 µg product/larva (7.7 µg a.s./larva)	***Schmidt K., 2020 20 48 BLC 0004***
Bombus terrestris	GLOB1911F	Oral, 48h	LD_{50} > 80.9 µg consumed a.s./bumblebee (LD_{50} > 186.7 µg consumed product/bumblebee)	***Amsel K., 2020 20 48 BBA 0010***
		Contact, 48h	LD_{50} > 200.0 µg a.s./bumblebee (LD_{50} > 461.3 µg product/bumblebee)	
Higher-tier studies (tunnel test, field studies)				
Not necessary				

FP: formulated product

9.6.1.1 Justification for new endpoints

As GLOB1911F is not identical to the reference formulation used during the EU Review of Difenoconazole, toxicity to bees from the formulation was also tested and used in the risk assessment.

9.6.2 Acute risk assessment (KCP 10.3.1.1)

The evaluation of the risk for bees was performed in accordance with the recommendations of the "Guidance Document on Terrestrial Ecotoxicology", as provided by the Commission Services (SANCO/10329/2002 rev.2 (final), October 17, 2002).

Applications of pesticides can potentially result in exposure of honeybees either through direct over-spray, or by contact with residues on plants whilst bees are foraging for food.

The risk assessment is carried out for a maximum single application rate of 0.250L GLOB1911F/ha corresponding to 125 g a.s./ha or 288.3 g GLOB1911F/ha (density of the formulation GLOB1911F is 1.1532 g/mL).

9.6.2.1 Hazard quotients for bees

Hazard quotients were calculated for oral exposure (Q_{HO}) and contact exposure (Q_{HC}) to Difenoconazole and GLOB1911F. A hazard quotient of less than 50 indicates an acceptable risk to bees in the field.

Table 9.6-2: First-tier assessment of the risk for bees due to the use of GLOB1911F in Potato

Intended use	Potato (covers intended uses in Sugar beet and Oilseed rape)		
Active substance	Difenoconazole		
Application rate (g/ha)	4 × 125 g a.s./ha		
Test design	**LD_{50} (lab.) (µg/bee)**	**Single application rate (g/ha)**	**Q_{HO}, Q_{HC} criterion: $Q_H \leq 50$**
Oral toxicity	> 177 µg a.s./bee	125	<0.706
Contact toxicity	> 100 µg a.s./bee		<1.25
Product	GLOB1911F		
Application rate (g/ha)	4 × 288.3 g FP/ha		
Test design	**LD_{50} (lab.) (µg/bee)**	**Single application rate (g/ha)**	**Q_{HO}, Q_{HC} criterion: $Q_H \leq 50$**
Oral toxicity	221.2 µg FP/bee	288.3	1.303
Contact toxicity	> 221.2µg FP/bee		<1.303

Q_{HO}, Q_{HC}: Hazard quotients for oral and contact exposure. Q_H values shown in bold breach the relevant trigger. FP formulated product

All the hazard quotients are below 50, indicating that the application of GLOB1911F poses a low acute risk to bees.

9.6.2.2 Higher-tier risk assessment for bees (tunnel test, field studies)

Not relevant as the risks are acceptable on lower tier.

9.6.3 Chronic risk assessment (KCP 10.3.1.2)

The chronic risk to bees has been assessed following the **EPPO 2010 scheme**[1], as proposed in the list of guidance documents relevant to the implementation of Regulation 1107/2009, published in the official EU Journal 2013/C 95/01 and 95/02.

Larval assessment according to EPPO 2010

Following the EPPO scheme for assessing potential risks to larvae (point 4 on the scheme), the scheme suggests that effects on growth or development can be excluded when considering GLOB1911F, since it is not IGR, and shows no effects on juvenile stages in other organisms as demonstrated by the risk assessments for non-target arthropods, and soil organisms (*Collembola* and *Hypoaspis*). Thus, GLOB1911F can be categorized as posing a low risk to bees.

However, as a chronic larval study is available, this potential low risk can be further demonstrated by carrying out a worst-case risk assessment through the calculation of a TER value as set out in the EPPO 2010 scheme (point 5, on the scheme).

A worst-case of potential exposure via residues in pollen and nectar can be estimated based on the default worst-case residue of 1 mg a.s./kg proposed in the EPPO 2010 scheme (see Note 6), based on a database of measured values from aerial plant parts, as a surrogate for nectar and pollen.

The default residues can then be combined with a measure of consumption in order to estimate the exposure. Worst case data from ***Rortais et al., 2005***[2], as proposed in the EPPO scheme, have been used to estimate the consumption by bee larvae:

Worst case: drone larvae consuming 98.2 mg sugar in 6.5 days (= 15.1 mg sugar /day).

Thus, considering residues of 1 mg a.s./kg sugar x consumption of 15.1 mg sugar/bee/day

Total exposure ETE = 0.0151 µg a.s./bee/day

This can be compared to the GLOB1911F larval NOED of 7.7 µg a.s./larva, which is 0.35 µg a.s./larva/day (based on 22-day study duration).

TER = NOED (µg a.s./larva/day) / ETE (µg a.s./bee/day) = 0.35 / 0.0151 = 23.18

The EPPO 2010 scheme proposes a trigger of 1 for assessment of the risk to honey bees. It is clear that with a TER value of 21.18, there is a wide safety margin, indicating that the proposed uses of GLOB1911F pose an acceptable risk to bee larval development.

Adult assessment according to EPPO 2010

The EPPO 2010 scheme does not recommend a chronic assessment for adults for foliar spray applications. However, as an approach is proposed as an assessment refinement for seed coatings/soil treatments (point 7, on the scheme), this approach can be adapted to provide a worst-case assessment for foliar sprays.

[1] EPPO/OEPP (2010). Environmental risk assessment scheme for plant protection products, Chapter 10: Honeybees (PP 3/10(3)). Bulletin OEPP/EPPO Bulletin 40: 323-331.
[2] Agnès RORTAIS, Gérard ARNOLD, Marie-Pierre HALM, Frédérique TOUFFET-BRIENS (2005). Modes of honeybees exposure to systemic insecticides: estimated amounts of contaminated pollen and nectar consumed by different categories of bees. Apidologie 36 (2005) 71–83

A worst-case of potential exposure via residues in pollen and nectar can be estimated, as before, based on the default worst-case value of 1 mg a.s./kg proposed in the EPPO 2010 scheme (see Note 6), based on a database of measured values from aerial plant parts as a surrogate for nectar and pollen.
The default residues can then be combined with a measure of consumption in order to estimate the exposure. Worst case data from ***Rortais et al., 2005***, as proposed in the EPPO 2010 scheme, have been used to estimate the consumption by bee foragers:

Worst case: forager consuming 128 mg nectar/day.

Thus considering residues of 1 mg a.s./kg sugar x consumption of 128 mg nectar/bee/day

Total exposure ETE = 0.128 µg a.s./bee/day

This can be compared to the GLOB1911F adult NOED of 8.47 µg a.s./bee/day.

TER = NOED (µg a.s./bee/day) / ETE (µg a.s./bee/day) = 8.47/ 0.128 = 66.17

The EPPO 2010 scheme proposes a trigger of 1 for assessment of the risk to honey bees. It is clear that with a TER value of 66.17, there is a wide safety margin, indicating that the proposed uses of GLOB1911F pose an acceptable chronic risk to adult bees.

9.6.4 Effects on bumble bees

A acute contact and oral toxicity study with GLOB1911F to the bumble bee *Bombus terrestris* is performed and data are available.
However, no risk assessment for bumble bee is carried out because the new EFSA guidance document (EFSA Journal 2013;11(7):3295) is not yet into force.

9.6.5 Effects on solitary bees

No information available.

9.6.6 Overall conclusions

The hazard quotients after oral and contact exposures are below the trigger value of 50. Therefore an acceptable acute risk to bees is expected from the application of GLOB1911F according to the intended GAP.

The chronic TERs for honey bee adults and larvae are higher than the trigger of 1, indicating that the proposed uses according to the intended GAP of GLOB1911F poses an acceptable chronic risk to honey bee adults and larvae.

9.7 Effects on arthropods other than bees (KCP 10.3.2)

zRMS Comments:	The submitted risk assessment based on the "Guidance Document on Terrestrial Ecotoxicology" (2002) was accepted. New studies for formulation were submitted. The laboratory study 2D and 3D, and semi-field study were evaluated and accepted for the risk assessment. **In field risk**. The hazard quotients are below the trigger value (HQ ≤ 1) for most species. Only for *Typhlodromus pyri* the HQ > 1. Considering the semi-field study with *Typhlodromus pyri*, it is expected the potential recovery for this species, indicating that the active substance poses an acceptable risk to arthropods other than bees. **Off-field risk**. The hazard quotients are below the trigger value (HQ ≤ 1) for all species indicating that the active substance poses an acceptable risk to arthropods other than bees. The risk to arthropods other than bees is acceptable if the GLOB1911F is applied in accordance with proposed use pattern.

9.7.1 Toxicity data

Studies on the toxicity to non-target arthropods have been carried out with Difenoconazole. Full details of these studies are provided in the respective EU DAR and related documents.

Effects on non-target arthropods of GLOB1911F were not evaluated as part of the EU assessment of Difenoconazole. New data submitted with this application are listed in Appendix 1 and summarised in Appendix 2.

The selection of studies and endpoints for the risk assessment deviates from the results of the EU review process. Justifications are provided below.

The toxicity of GLOB1911F to non-target arthropods has been investigated by carrying out Tier II tests on the standard species *Typhlodromus pyri* and *Aphidius rhopalosiphi* and as well as on *Poecilus cupreus* and *Chrysoperla carnea.* The latter two are relevant species for the intended uses, the arable crops potato, sugar beet and oilseed rape. The results of these studies are summarised in **Błąd! Nie można odnaleźć źródła odwołania.**.

Table 9.7-1: Endpoints and effect values relevant for the risk assessment for non-target arthropods

Species	Substance	Exposure System	Results	Reference
Typhlodromus pyri (protonymphs)	GLOB1911F	Extended laboratory test, Tier II. Bean leaf discs (2D) treated with product.	Mortality: LR_{50} = 0.534 L FP/ha Reproduction: ER_{50} could not be determined. Was estimated to be between 0.300 < ER_{50} ≤ 0.450 L FP/ha	***Röhlig U., 2020a 20 48 NTE 0001***

Species	Substance	Exposure System	Results	Reference
Aphidius rhopalosiphi (adults)	GLOB1911F	Extended laboratory test, Tier II. Barley plants (3D) treated with product.	Mortality : LR_{50} > 1.519 L FP/ha Reproduction : ER_{50} > 1.519 L FP/ha	***Röhlig U., 2020b 20 48 NAE 0001***
Poecilus cupreus (adults)	GLOB1911F	Extended laboratory test, Tier II. Sandy soil (2D) treated with product.	Mortality : LR_{50} > 1.519 L FP/ha Effect on food uptake: ER_{50} > 1.519 L FP/ha	***Röhlig U., 2020c 20 48 NLE 0001***
Chrysoperla carnea (larvae)	GLOB1911F	Extended laboratory test, Tier II. Bean leaf discs (2D) treated with product.	Mortality : LR_{50} > 1.519 L FP/ha Reproduction : ER_{50} > 1.519 L FP/ha	***Röhlig U., 2020d 20 48 NCE 0001***
Field or semi-field tests				
Typhlodromus pyri (protonymphs)	GLOB1911F	Extended laboratory test Bean plants (3D) Aged residues	Mortality : LR_{50} > 0.675 L FP/ha Reproduction : ER_{50} > 0.675 L FP/ha	***Röhlig U., 2020e 20 48 NTR 0003***

FP: Formulated product

9.7.1.1 Justification for new endpoints

As studies on the toxicity to non-target arthropods are carried out with the formulation and GLOB1911F is not the same formulation as the one of the EU Review, toxicity to non-target arthropods from GLOB1911F was tested and used in the risk assessment.

9.7.2 Risk assessment

The evaluation of the risk for non-target arthropods was performed in accordance with the recommendations of the "Guidance Document on Terrestrial Ecotoxicology", as provided by the Commission Services (SANCO/10329/2002 rev.2 (final), October 17, 2002), and in consideration of the recommendations of the guidance document ESCORT 2.

The risk assessment is based on the standard species *Aphidius rhopalosiphi* and *Typhlodromus pyri* as well as on *Poecilus cupreus* and *Chrysoperla carnea.* which are relevant species for the intended uses.

9.7.2.1 Risk assessment for in-field exposure

Exposure

Non-target arthropods living in the crop can be exposed to residues from GLOB1911F by direct contact either as a result of overspray or through contact with residues on plants and soil or in food items. GLOB1911F is applied at a maximum dose rate of 4 x 0.25L product/ha in Potato, 2 x 0.25L product/ha in Sugar beet and 2 x 0.25L product/ha in Oilseed rape. For the in-field exposure calculations (predicted environmental residue, PER) the worst-case dose rate of 4 x 0.25L product/ha is considered and covers the other intended uses in Sugar beet and Oilseed rape. $PER_{in\text{-}field}$ is calculated according to ESCORT 2 using the following equation:

$PER_{in\text{-}field}$ = Application rate (L FP/ha) x MAF (FP = formulated product)

The MAF is a generic multiple application factor, which is used to take into account the potential build-up of applied substances between applications based on the application interval, DT_{50} value and number of applications. The default MAF value for 4 applications and a ratio of $T_{1/2}$: spray interval of 2.3:1 is used and equals 2.7.

Risk assessment

As only Tier II tests were carried out on *Typhlodromus pyri*, *Aphidius rhopalosiphi*, *Poecilus cupreus* and *Chrysoperla carnea*, no Tier 1 risk assessment was conducted.

The potential risk of GLOB1911F to in-field non-target arthropods was assessed by calculation of the hazard quotient (HQ = exposure/toxicity) with the predicted environmental rate (PER) and the lowest lethal rate (LR_{50}) values according to the following formula:

$$\text{In field HQ} = \frac{\text{In - field PER}}{LR_{50}}$$

The HQ trigger for Tier II extended laboratory studies is 1.

Table 9.7-2: Higher-tier assessment of the in-field risk for non-target arthropods due to the use of GLOB1911F in Potato

Intended use	Potato (covers intended uses in Sugar beet and Oilseed rape)		
Active substance/product	Difenoconazole/ GLOB1911F		
Application rate (L FP/ha)	4 × 0.25 L FP/ha		
MAF	2.7		
Test species Higher-tier	**LR_{50} (extended lab.) (L FP/ha)**	**$PER_{in\text{-}field}$ (L FP/ha)**	**$HQ_{in\text{-}field}$ criterion: HQ ≤ 1**
Typhlodromus pyri	~~0.534~~ 0.300	0.675	~~1.264~~ **2.25**
Aphidius rhopalosiphi	> 1.519		< 0.444
Poecilus cupreus	> 1.519		< 0.444
Chrysoperla carnea	> 1.519		< 0.444

MAF: Multiple application factor; PER: Predicted environmental rate; FP: formulated product; HQ: Hazard quotient; DALT: Days after last treatment. Criteria values shown in bold breach the relevant trigger.

The in-field HQ values for exposure to maximum residues on leaves are all less than the trigger value of 1 for the Tier II studies for the species *Aphidius rhopalosiphi*, *Poecilus cupreus* and *Chrysoperla carnea*, except for the species *Typhlodromus pyri* for which the HQ is slightly above the trigger of 1.

Therefore, a higher-tier aged residue study under semi-field conditions with *Typhlodromus pyri* was conducted (Röhlig U., 2020e). The predatory mite protonymphs were exposed to semi-field aged residues of GLOB1911F at doses of 0.575 L product/ha and 0.675 L product/ha.

The results showed that after 7 days, no effects > 50 % were observed at doses of 0.575 L/ha and 0.675 L/ha, demonstrating the potential for in-field recovery of *Typhlodromus pyri*.

It is concluded that the in-field risk of the proposed use of GLOB1911F to non-target arthropods is acceptable following application according to the proposed use patterns.

9.7.2.2 Risk assessment for off-field exposure

Exposure

Risk assessment of areas immediately surrounding the crop is considered important since these areas represent a natural reservoir for immigration, emigration and reproduction of arthropod populations and provide increased species diversity. Exposure of non-target arthropods living in off-field areas to GLOB1911F will mainly be due to spray drift from field applications. Off-field areas are assumed to be densely vegetated and thus spray drift is unlikely to reach bare ground. Therefore, evaluation of exposure *via* soil residues in off-field areas was not considered. GLOB1911F is applied at a maximum dose rate of 4 x 0.25L product/ha in Potato, 3 x 0.25L product/ha in Sugar beet and 2 x 0.25L product/ha in Oilseed rape. For the off-field exposure calculations the worst-case dose rate of 4 x 0.25L product/ha is considered and covers the other intended uses in Sugar beet and Oilseed rape. Off-field foliar PER values were calculated from in-field foliar PERs in conjunction with drift values published by the *BBA (2000)*[3] as shown in the following equation:

$$\text{Off - field foliar PER} = \frac{\text{Maximum in - field foliar PER x (\% drift/100)}}{\text{vegetation distribution factor}}$$

Vegetation distribution factor: The model used to estimate spray drift was developed for drift onto a two-dimensional water surface and, as such, does not account for interception and dilution by three-dimensional vegetation in off-crop areas. Therefore, a vegetation distribution or dilution factor is incorporated into the equation when calculating PERs to be used in conjunction with toxicity endpoints derived from two-dimensional (glass plate, leaves, leaf disc or soil) studies. A dilution factor of 10 is recommended by ESCORT 2. For 3-dimensional studies, i.e. where spray treatment is applied onto whole plants, the dilution factor of 10 is not used, as any dilution over the 3-dimensional vegetation surface is accounted for in the study design.

Drift factor: the drift value for 4 applications in field crops at a distance of 1m is 1.85%. The drift factor (% drift/100) amounts therefore to 0.0185.

The resulting PER off-field values are shown in **Błąd! Nie można odnaleźć źródła odwołania.Błąd! Nie można odnaleźć źródła odwołania.**.

Table 9.7-3: Off-field foliar Predicted Environmental Rates (PER)

Crop, intended use	Test species Tier 2	Study type	Maximum in-field foliar PER (L FP/ha)	drift factor (% drift/100)	Vegetation distribution factor	Off-field foliar PER (L FP/ha)
Potato 4 x 0.25L FP/ha	*Typhlodromus pyri*	Tier II, 2D (bean leaf discs)	0.675L FP/ha	0.0185	10	0.0012
	Aphidius rhopalosiphi	Tier II, 3D (barley plants)	0.675L FP/ha	0.0185	1	0.0125
	Poecilus cupreus	Tier II, 2D (sandy soil)	0.675L FP/ha	0.0185	10	0.0012
	Chrysoperla carnea	Tier II, 2D (bean leaf discs)	0.675L FP/ha	0.0185	10	0.0012

Risk assessment

The risk assessment is conducted according to ESCORT 2 guidance. This guidance recommends to

[3] BBA (2000): Bundesanzeiger Jg. 52 (Official Gazette), Nr 100, S. 9879-9880 (25.05.2000) Bekanntmachung über die Abtrifteckwerte, die bei der Prüfung und Zulassung von Pflanzenschutzmitteln herangezogen werden

calculate the corrected $PER_{off\text{-}field}$ by multiplying the $PER_{off\text{-}field}$ with a correction factor (uncertainty factor), to account for extrapolation from indicator species, to the species diversity expected in off-crop areas. A correction factor of 5 need to be used when assessing Tier II data, or 10 for Tier I data.

The predicted environmental rate is compared with the toxicity endpoints according to the following formula:

$$\text{Off - field HQ} = \frac{PER_{off-field}\ (g/ha)}{LR_{50}\ (g/ha)} \times \text{Correction factor}$$

The HQ trigger for Tier II extended laboratory studies is 1.

As only Tier II extended lab tests were carried out on *Typhlodromus pyri, Aphidius rhopalosiphi, Poecilus cupreus* and *Chrysoperla carnea,* no Tier 1 risk assessment is conducted.

Table 9.7-4: Higher-tier assessment of the off-field risk for non-target arthropods due to the use of GLOB1911F in Potato

Intended use	Potato (covers intended uses in Sugar beet and Oilseed rape)
Active substance/product	Difenoconazole/ GLOB1911F
Application rate (g/ha)	4 × 0.25 L FP/ha
MAF	2.7
vdf	10 (2D) / 1 (3D)

Test species Higher-tier	**LR_{50} (extended lab.) (L FP/ha)**	**Drift factor**	**$PER_{off\text{-}field}$ foliar (L FP/ha)**	**CF**	**Corr. $PER_{off\text{-}field}$ (L FP/ha)**	**$HQ_{off\text{-}field}$ foliar criterion: HQ ≤ 1**
Typhlodromus pyri	~~0.534~~ 0.300	0.0185	0.0012	5	0.0062	~~0.011692~~ 0.020667
Aphidius rhopalosiphi	> 1.519	0.0185	0.0125	5	0.0624	0.041104
~~*Poecilus cupreus*~~	~~> 1.519~~	~~0.0185~~	~~0.0012~~	~~5~~	~~0.0062~~	~~0.00411~~
Chrysoperla carnea	> 1.519	0.0185	0.0012	5	0.0062	0.00411

MAF: Multiple application factor; vdf: Vegetation distribution factor; (corr.) PER: (corrected) Predicted environmental rate; CF: Correction factor. FP: formulated product.

The off-field HQ values for *T. pyri*, *A. rhopalosiphi*, *P. cupreus* and *C. carnea*, *A.* are lower than the trigger value of 1, indicating acceptable risk to non-target arthropods in off-field areas following the use of GLOB1911F according to the intended GAP.

9.7.2.3 Additional higher-tier risk assessment

Not relevant.

9.7.2.4 Risk mitigation measures

No risk mitigation needed.

9.7.3 Overall conclusions

GLOB1911F does not pose an unacceptable risk to non-target arthropods in in-field and off-field areas

following application according to the intended GAP.

9.8 Effects on non-target soil meso- and macrofauna (KCP 10.4)

zRMS Comments:	The submitted information and justification were accepted. New studies were submitted and accepted. The endpoints for active substance and its metabolites were agreed at the EU level. The max PECs values for active substance and its metabolites were used for acute and long-term risk assessment. The PECs values for oilseed rape (winter and spring), 2 x 125 g as/ha, crop interception 40/40 and 40/80 were corrected (see Section 8. Fate and behavior). The proposed risk envelope was accepted (the OSRs represent a worse case, so potatoes and sugar beets are covered by OSRs). The TER_A values for active substance, its metabolites and formulation is above the trigger value of 10, the risk is acceptable. **Difenoconazole**. The TER_{LT} value for active substance in case of proposed used in oilseed rape (winter and spring), 2 x 125 g as/ha, crop interception 40/80 and 40/40, respectively, is below the trigger value of 5. For further refinement a new field study was submitted. The study results and justification proved that chronic risk for earthworms is acceptable. An acceptable risk to non-target soil organisms meso- and macrofauna is expected if the application of the GLOB1911F is in accordance with proposed use pattern.

9.8.1 Toxicity data

Studies on the toxicity to earthworms and other non-target soil organisms (meso- and macrofauna) have been carried out with Difenoconazole and its relevant metabolites. Full details of these studies are provided in the respective EU DAR and related documents.

Effects on earthworms and other non-target soil organisms (meso- and macrofauna) of GLOB1911F were not evaluated as part of the EU assessment of Difenoconazole. New data submitted with this application are listed in Appendix 1 and summarised in Appendix 2.

Table 9.8-1: Endpoints and effect values relevant for the risk assessment for earthworms and other non-target soil organisms (meso- and macrofauna)

Species	Substance	Exposure System	Results	Reference
Acute toxicity to earthworms				
Eisenia fetida	Difenoconazole	Mixed into substrate 14 d, acute	LC_{50} > 610 mg as /kg dw $LC_{50,corr}$ > 305 mg as/kg dw*	EFSA, 2011
Eisenia fetida	CGA205375	Mixed into substrate 14 d, acute	LC_{50} = 312 mg/kg dw $LC_{50,corr}$ = 156 mg/kg dw*	EFSA, 2011

Species	Substance	Exposure System	Results	Reference
Eisenia fetida	CGA71019	Mixed into substrate 14 d, acute	LC_{50} > 1000 mg/kg dw	EFSA, 2011
Chronic toxicity to earthworms				
Eisenia fetida	Difenoconazole	Mixed into substrate 56 d, chronic 5 % peat content	**NOEC = 0.5 mg as/kg dw NOEC$_{corr}$ = 0.25 mg as/kg dw***	Confirmatory data Difenoconazole. EFSA, 2014
Eisenia fetida	Difenoconazole	Mixed into substrate 56 d, chronic 5 % peat content	NOEC = 1 mg as/kg dw NOEC$_{corr}$ = 0.5 mg as/kg dw*	Sacker, 2009a
Eisenia fetida	CGA205375	Mixed into substrate 56 d, chronic	**NOEC = 9.6 mg/kg dw NOEC$_{corr}$ = 4.8 mg/kg dw***	Confirmatory data Difenoconazole. EFSA, 2014
Eisenia fetida	CGA205375	Mixed into substrate 56 d, chronic 5 % peat content	NOEC = 1 mg/kg dw NOEC$_{corr}$ = 0.5 mg/kg dw*	Sacker, 2009b
Eisenia fetida	CGA71019	Mixed into substrate 28 d, chronic 10 % peat content	NOEC = 1 mg/kg dw	EFSA, 2011
Eisenia andrei	GLOB1911F	Mixed into substrate 56 d, chronic 10 % peat content	NOEC = 16.45 mg product/kg dw (7.44 mg a.s./kg dw) NOEC$_{corr}$ = 8.225 mg product/kg dw* (3.72 mg a.s./kg dw)	Friedrich S., 2020a 20 48 TEC 0012
Eisenia fetida	Difenoconazole 250 g/L EC	Mixed into substrate 56 d, chronic 10 % peat content	NOEC = 8.8 mg product/kg dw (2.1 mg a.s./kg dw) NOEC$_{corr}$ = 4.4 mg product/kg dw* (1.05 mg a.s./kg dw)	Servajean E., 2009 09-99-048-ES
Chronic toxicity to collembolla				
Folsomia candida	Difenoconazole	Mixed into substrate 28 d, chronic 10 % peat content	NOEC = 500 mg as/kg dw NOEC$_{corr}$ = 250 mg as/kg dw*	EFSA, 2011
Folsomia candida	CGA205375	Mixed into substrate 56 d, chronic	NOEC = 2.4 mg/kg dw NOEC$_{corr}$ = 1.2 mg/kg dw*	Confirmatory data Difenoconazole. EFSA, 2014
Folsomia candida	CGA71019	Mixed into substrate 28 d, chronic	NOEC = 1.8 mg/kg dw	EFSA, 2011
Folsomia candida	GLOB1911F	Mixed into substrate 28 d, chronic 5% peat	NOEC = 215.19 mg product/kg dw NOEC$_{corr}$ = 107.6 mg product/kg dw*	Friedrich S., 2020b 20 48 TCC 0011
Chronic toxicity to Hypoaspis				
Hypoaspis aculeifer	GLOB1911F	Mixed into substrate 14 d, chronic	NOEC = 625 mg product/kg dw	Schulz L., 2020a 20 48 THC 0009

Species	Substance	Exposure System	Results	Reference
		5 % peat content	$NOEC_{corr}$ = 312.5 mg product/kg dw*	
Field studies				
Difenoconazole 250 g/L EC		No statistically significant effects on single species, ecological groups and total earthworm abundance and biomass at 1, 6 and 12 months after a single application of 1.5 L/ha on bare soil (0.317 mg a.i./kg soil, assuming a bulk density of 1.5 g/cm³ and a soil depth of 10 cm)		Schulz L., 2015 14 10 48 007 F
Litter bag test				
-				

* Difenoconazole and metabolite CGA205375 have a log Pow greater than 2. Therefore, the NOEC should be reduced by a factor of 2. The log Pow for the soil metabolite CGA71019 is less than 2 and does not require adjustment of the NOEC.

9.8.2 Risk assessment

The evaluation of the risk for earthworms and other non-target soil organisms (meso- and macrofauna) was performed in accordance with the recommendations of the "Guidance Document on Terrestrial Ecotoxicology", as provided by the Commission Services (SANCO/10329/2002 rev 2 (final), October 17, 2002).

9.8.2.1 First-tier risk assessment

The relevant PEC_{soil} for risk assessments covering the proposed use pattern are taken from Section 8 (Environmental Fate), Chapter 8.7.2, Table 8.7-3 to Table 8.7-15. According to the assessment of environmental-fate data, multi-annual accumulation in soil need to be considered for Difenoconazole. Therefore, risk assessment is performed with the $PEC_{soil,\ accumulation}$.

For the risk assessment the highest $PEC_{Soil,\ accumulation}$ resulting from the critical intended uses of GLOB1911F is taken and is considered as worst-case scenario which covers the risk from all other intended uses on sugar beet and potatoes.

Table 9.8-2: First-tier assessment of the acute and chronic risk for earthworms and other non-target soil organisms (meso- and macrofauna) due to the use of GLOB1911F (2 x 125 g as/ha on Oilseed rape, crop interception 40/80)

Intended use	Oilseed rape (winter and spring), 2 x 125 g as/ha, crop interception 40/80 (since this intended use leads to highest $PEC_{Soil,\ accumulation}$ values, it is considered as worst-case and covers the other intended uses on sugar beet and potatoes)		
Acute effects on earthworms			
Product/active substance	**LC_{50} (mg/kg dw)**	**$PEC_{soil,\ accumulation}$ No tillage (mg/kg dw)**	**TER_a (criterion TER ≥ 10)**
Difenoconazole	> 305	0.2109	> 1446.18
CGA205375	156	~~0.04038~~ 0.0172	~~3 863.30~~ 9070

CGA71019	> 1000	~~0.01774~~ 0.0038	~~> 56 369.79~~ > 263158
Chronic effects on earthworms			
Product/active substance	**NOEC (mg/kg dw)**	**$PEC_{soil,\ accumulation}$ No tillage (mg/kg dw)**	**TER_{lt} (criterion TER ≥ 5)**
Difenoconazole	0.25	0.2109	**1.19**
CGA205375	4.8	~~0.04038~~ 0.0172	~~118.87~~ 279
CGA71019	1.0	~~0.01774~~ 0.0038	65.37 263
GLOB1911F	8.225	~~0.7365~~ 0.2306	~~11.17~~ 36.7
Chronic effects on other soil macro- and mesofauna: *Folsomia candida*			
Product/active substance	**NOEC (mg/kg dw)**	**$PEC_{soil,\ accumulation}$ No tillage (mg/kg dw)**	**TER_{lt} (criterion TER ≥ 5)**
Difenoconazole	250	0.2109	1185.40
CGA205375	1.2	~~0.04038~~ 0.0172	~~29.72~~ 69.8
CGA71019	1.8	~~0.01774~~ 0.0038	~~101.47~~ 474
GLOB1911F	107.6	~~0.7365~~ 0.2306	~~146.10~~ 467
Chronic effects on other soil macro- and mesofauna: *Hypoaspis aculeifer*			
Product/active substance	**NOEC (mg/kg dw)**	**$PEC_{soil,\ accumulation}$ No tillage (mg/kg dw)**	**TER_{lt} (criterion TER ≥ 5)**
GLOB1911F	312.5	~~0.7365~~ 0.2306	~~424.30~~ 1355

TER values shown in bold fall below the relevant trigger.

The use of GLOB1911F on winter oilseed rape with 2 applications in autumn (crop interception 40/40) is only considered for the cMS The Netherlands. However, risk assessment for earthworms and other non-target meso- and macrofauna was also performed for this use as it results in higher $PEC_{soil,\ accumulation}$ values.

Table 9.8-3: First-tier assessment of the acute and chronic risk for earthworms and other non-target soil organisms (meso- and macrofauna) due to the use of GLOB1911F (2 x 125 g as/ha on Oilseed rape, crop interception 40/40)

Intended use	Oilseed rape (winter), 2 x 125 g as/ha, crop interception 40/40 **(**This use on winter oilseed rape with 2 applications in autumn (crop interception 40/40) is only for the cMS The Netherlands. However, it is included in this core dossier and considered in the critical GAP in order to have it evaluated at Zonal level by the zRMS Poland.)		
Acute effects on earthworms			
Product/active substance	**LC_{50} (mg/kg dw)**	**$PEC_{soil,\ accumulation}$ No tillage (mg/kg dw)**	**TER_a (criterion TER ≥ 10)**

Difenoconazole	> 305	0.3193	> 955.21
CGA205375	156	~~0.04038~~ 0.0259	~~3 863.30~~ 6023
CGA71019	> 1000	~~0.01774~~ 0.0057	~~> 56 369.79~~ > 175439
Chronic effects on earthworms			
Product/active substance	**NOEC (mg/kg dw)**	**$PEC_{soil,\ accumulation}$ No tillage (mg/kg dw)**	**TER_{lt} (criterion TER ≥ 5)**
Difenoconazole	0.25	0.3193	**0.78**
CGA205375	4.8	~~0.04038~~ 0.0259	~~118.87~~ 185
CGA71019	1.0	~~0.01774~~ 0.0057	56.37 175
GLOB1911F	8.225	~~0.7365~~ 0.2306	~~11.17~~ 35.7
Chronic effects on other soil macro- and mesofauna: *Folsomia candida*			
Product/active substance	**NOEC (mg/kg dw)**	**$PEC_{soil,\ accumulation}$ No tillage (mg/kg dw)**	**TER_{lt} (criterion TER ≥ 5)**
Difenoconazole	250	0.3193	782.96
CGA205375	1.2	~~0.04038~~ 0.0259	~~29.72~~ 46.3
CGA71019	1.8	~~0.01774~~ 0.0057	~~101.47~~ 316
GLOB1911F	107.6	~~0.7365~~ 0.2306	~~146.10~~ 467
Chronic effects on other soil macro- and mesofauna: *Hypoaspis aculeifer*			
Product/active substance	**NOEC (mg/kg dw)**	**$PEC_{soil,\ accumulation}$ No tillage (mg/kg dw)**	**TER_{lt} (criterion TER ≥ 5)**
GLOB1911F	312.5	~~0.7365~~ 0.2306	~~424.30~~ 1355

TER values shown in bold fall below the relevant trigger.

The long-term TER values for *Folsomia candida* and *Hypoaspis aculeifer* exceed the Annex VI long-term trigger values of 5, indicating that GLOB1911F poses a low long-term risk to other non-target soil organisms when applied according to the intended GAP.

The acute-term TER values for earthworms exceed the Annex VI acute-term trigger values of 10, indicating that GLOB1911F poses a low acute risk to earthworms when applied according to the intended GAP.

Based on the $NOEC_{corr}$ of the formulation GLOB1911F, the long-term TER value for earthworms exceeds the Annex VI long-term trigger values of 5, indicating that the chronic risk to earthworms is acceptable when GLOB1911F is applied according to the proposed intended GAP. However, the data endpoints on the active substance Difenoconazole should also be taken into account and based on the $NOEC_{corr}$ of

difenoconazole (0.25 mg a.s./kg dw) no acceptable chronic risk to earthworms can be expected. Therefore a higher-tier field study was performed and is further explained in the section below.

9.8.2.2 Higher-tier risk assessment

Since the chronic risk assessment to earthworms based on the $NOEC_{corr}$ of difenoconazole is not acceptable, an earthworm field study was performed on the formulation Difenoconazole 250 g/L EC (dependent on the country, this already authorised product has trade name DIFCOR, DIFCOR 250 EC, NARITA). The study (Schulz L., 2015) is summarized in Appendix 2, a brief overview is given here.

The purpose of the study was to investigate possible effects on field populations of earthworms after application of the test item Difenoconazole 250 g/L EC. Therefore, a field experiment lasting about one year was performed. The effects of the test item with regard to species composition, biomass and abundance were compared to a tap water treated control and to a reference item.
The study was performed in Machern (Saxony/Germany) in accordance with the ISO Guideline 11268-3. Difenoconazole 250 EC was applied once to bare soil at the single rate of 1.5 L/ha (375 g a.s./ha) in the spring of 2014. About 1 month after the application, the field was seeded with the fodder crop "Landsberger Gemenge" (clover grass mixture) which stayed on the field until the end of the study. The validity criteria were met. It was concluded that the application of Difenoconazole 250 g/L EC had no adverse effects on single species, ecological groups and total earthworm abundance and biomass about one, six and twelve months after test item application and that the effects were always lower than 50%. The analysis of the difenoconazole concentration in soil on the first 10 cm of soil immediately after the application showed a good recovery since these ranged from 0.300 to 0.354 mg a.s./kg (with a mean of 0.317 mg a.s./ha) while the nominal concentration was 0.250 mg/kg. Based on the study, it is considered that soil concentrations of 0.317 mg a.s./kg soil represent an acceptable risk to earthworms.

The field study was conducted with another formulation than GLOB1911F, but extrapolation can be made from the study with Difenoconazole 250 g/L EC to GLOB1911F and this higher-tier study can be used in the risk assessment of GLOB1911F for several reasons:

- In the earthworm field study, Difenoconazole 250 g/L EC is applied on bare soil and the effects of the test item with regard to species composition, biomass and abundance were assessed up until 1 year after the application. When spraying the formulation on the soil, the formulation will be broken down in the soil to the active substance and its other components and to which earthworms will be exposed to. However during the test duration of 1 year, only the active substance will be left over and therefore the formulation type used is less relevant. So in these field studies where a product is applied onto soil, the active substance is considered as more relevant compared to the used formulation.
- When comparing the results of the chronic earthworm laboratory studies conducted with the formulations Difenoconazole 250 g/L EC and GLOB1911F, it can be concluded that GLOB1911F is less toxic to earthworms than Difenoconazole 250 g/L EC. (NOEC of 7.44 mg a.s./kg dw for GLOB1911F compared to a NOEC of 2.1 mg a.s./kg dw for Difenoconazole 250 g/L EC, see table 9.8-1). It can therefore be considered that the field study with Difenoconazole 250 g/L EC is worst-case. Reference is made to the Part C of this dossier where the composition of Difenoconazole 250 EC is also given.

It should be noted that in this field study Difenoconazole 250 EC was applied once to bare soil at the single rate of 1.5 L/ha (375 g a.s./ha). This can be considered as a worst-case approach since this dose rate is higher than the overall dose corresponding to the multiple applications on the intended crops and taking into account crop interception. According to the critical GAP this is: 4 applications on potatoes at 125 g a.s./ha with four times 85% crop interception, 3 applications on sugar beet at 125 g a.s./ha with 3 times 90% crop interception, 2 applications on oilseed rape at 125 g a.s./ha with 40% + 80% crop interception (1 early autumn application) or with 2 times 40% crop interception (in case of 2 early autumn applications).
Furthermore, in the field study difenoconazole concentration in the first 10 cm of soil was analysed

immediately after the application. The mean concentration of Difenoconazole analysed was 0.317 mg a.s./kg (127% of the corresponding nominal level of 0.250 mg a.s./kg soil assuming a bulk density of 1.5 g/cm³ and a soil depth of 10 cm). This concentration of 0.317 mg a.s./ha can be compared to the predicted concentration in soil including accumulation at a soil depth of 10cm ($PEC_{soil, accu}$ at 10 cm) resulting from the use of GLOB1911F according to the critical GAP. A $PEC_{soil, accu}$ value at 10cm (instead of the default soil depth of 5cm commonly used) is considered in order to compare this value in a correct manner with the analysed difenoconazole concentration at 10cm in the field study (0.317 mg a.s./kg). The highest $PEC_{soil, accu}$ at 10cm are obtained after the use of GLOB1911F on winter and spring oilseed rape and equals 0.1597 mg a.s./kg dw (assuming 2 x 40% crop interception) or 0.1055 mg a.s./kg dw (assuming 40% + 80% crop interception). This can be considered as worst-case and covers the other intended uses on potato and sugar beet. Reference is made to table 8.7-6/01 and table 8.7-6/02 of the dRR Section B8 where $PEC_{soil, accu}$ at 10cm for winter and spring oilseed rape are given.
Since the worst-case $PEC_{soil, accu}$ at 10cm of difenoconazole following the use of GLOB1911F is lower than the analysed concentration of 0.317 mg a.s./kg dw in the field study at which no adverse effects were observed, it is concluded that the intended use of GLOB1911F presents an acceptable risk to earthworms.

9.8.3 Overall conclusions

The long-term TER values for *Folsomia candida* and *Hypoaspis aculeifer* exceed the Annex VI long-term trigger values of 5, indicating that GLOB1911F poses a low long-term risk to other non-target soil organisms when applied according to the intended GAP.

The acute-term TER values for earthworms exceed the Annex VI acute-term trigger values of 10, indicating that GLOB1911F poses a low acute risk to earthworms when applied according to the intended GAP.

Based on a higher-tier field study with earthworms, it can be concluded that the chronic risk of GLOB1911F to earthworms is acceptable in accordance with the intended GAP.

9.9 Effects on soil microbial activity (KCP 10.5)

zRMS Comments:	The submitted information and data were accepted. The endpoints for difenoconazole and its metabolites were agreed at the EU level. New study was submitted and accepted. The risk envelope approach was used and accepted. The PECs values for oilseed rape (winter and spring), 2 x 125 g as/ha, crop interception 40/80 and 40/40 were corrected (see Section 8. Fate and behavior). The OSRs represent a worse case, so potatoes and sugar beets are covered by OSRs. The worst case of PECs was used in risk assessment. An acceptable risk to soil microorganisms is expected if the GLOB1911F formulation is applied in accordance with proposed use pattern.

9.9.1 Toxicity data

Studies on effects on soil microorganisms have been carried out with Difenoconazole and its metabolites. Full details of these studies are provided in the respective EU DAR and related documents.

Effects on soil microorganisms of GLOB1911F were not evaluated as part of the EU assessment of Difenoconazole. New data submitted with this application are listed in Appendix 1 and summarised in Appendix 2.

The selection of studies and endpoints for the risk assessment deviates from the results of the EU review process. Justifications are provided below.

Table 9.9-1: Endpoints and effect values relevant for the risk assessment for soil microorganisms

Endpoint	Substance	Exposure System	Results	Reference
N-mineralisation	Difenoconazole	28 d, aerobic soil type	<25% effect at day 28 at 1.67 and 16.7 mg as/kg dw soil in silty loam 60% increase in loamy sand	***EFSA, 2011***
C-mineralisation	Difenoconazole	28 d, aerobic soil type	<25% effect at day 28 at 1.67 and 16.7 mg as/kg dw soil	***EFSA, 2011***
N-mineralisation	CGA71019	28 d, aerobic soil type	<25% effect at day 28 at 0.035 and 0.353 mg/kg dw soil	***EFSA, 2011***
C-mineralisation	CGA71019	28 d, aerobic soil type	<25% effect at day 28 at 0.035 and 0.353 mg/kg dw soil	***EFSA, 2011***
N-mineralisation	CGA205375	28 d, aerobic soil type	<25% effect at day 28 at 0.09 and 0.22 mg/kg dw soil	***EFSA, 2011***
C-mineralisation	CGA205375	28 d, aerobic soil type	<25% effect at day 28 at 0.09 and 0.22 mg/kg dw soil	***EFSA, 2011***
N-mineralisation	GLOB1911F	28 d, aerobic loamy sand (DIN 4220)/ sandy loam (USDA)	No adverse effect at 28-day incubation period (14-28 d time interval) at 0.7365 and 7.365 mg product/kg dry soil	***Schulz L., 2020b 20 48 SMN 0005***

9.9.1.1 Justification for new endpoints

As GLOB1911F is not identical to the reference formulation used during the EU Review of Difenoconazole, toxicity to soil micro-organisms from the formulation was also tested and used in the risk assessment.

9.9.2 Risk assessment

The evaluation of the risk for soil microorganisms was performed in accordance with the recommendations of the "Guidance Document on Terrestrial Ecotoxicology", as provided by the Commission Services (SANCO/10329/2002 rev 2 (final), October 17, 2002).

The relevant $PEC_{soil,\ accumulation}$ for risk assessments covering the proposed use pattern are taken from Section 8 (Environmental Fate), Chapter 8.7.2, Table 8.7-3 to Table 8.7-15 and were already used in the risk assessment for earthworms and other non-target soil organisms (meso- and macrofauna) (see 9.8).
For the risk assessment the highest $PEC_{Soil,\ accumulation}$ resulting from the critical intended uses of GLOB1911F is taken and is considered as worst-case scenario which covers the risk from all other intended uses on sugar beet and potatoes.

Table 9.9-2: Assessment of the risk for effects on soil micro-organisms due to the use of GLOB1911F in Oilseed rape

Intended use	Oilseed rape (winter and spring), 2 x 125 g as/ha, crop interception 40/80 (covers intended uses on Sugar beet and Potato)		
N-mineralisation			
Product/active substance	**Max. conc. with effects ≤ 25 % (mg/kg dw)**	**$PEC_{soil,\ accumulation}$ (5cm, no tillage) (mg/kg dw)**	**Risk acceptable?**
Difenoconazole	16.7 (at 28 d)	0.2109	Yes
CGA71019	0.353 (at 28 d)	~~0.04038~~ 0.0038	Yes
CGA205375	0.22 (at 28 d)	~~0.01774~~ 0.0172	Yes
GLOB1911F	7.365 (at 28 d)	~~0.7365~~ 0.2306	Yes
C-mineralisation			
Product/active substance	**Max. conc. with effects ≤ 25 % (mg/kg dw)**	**$PEC_{soil,\ accumulation}$ (5cm, no tillage) (mg/kg dw)**	**Risk acceptable?**
Difenoconazole	16.7 (at 28 d)	0.2109	Yes
CGA71019	0.353 (at 28 d)	~~0.04038~~ 0.0038	Yes
CGA205375	0.22 (at 28 d)	~~0.01774~~ 0.0172	Yes

Table 9.9-3: Assessment of the risk for effects on soil micro-organisms due to the use of GLOB1911F in Oilseed rape

Intended use	Oilseed rape (winter), 2 x 125 g as/ha, crop interception 40/40 (This use on winter oilseed rape with 2 applications in autumn (crop interception 40/40) is only for the cMS The Netherlands. However, it is included in this core dossier and considered in the critical GAP in order to have it evaluated at Zonal level by the zRMS Poland.)		
N-mineralisation			
Product/active substance	**Max. conc. with effects ≤ 25 % (mg/kg dw)**	**$PEC_{soil,\ accumulation}$ (5cm, no tillage) (mg/kg dw)**	**Risk acceptable?**
Difenoconazole	16.7 (at 28 d)	0.3193	Yes
CGA71019	0.353 (at 28 d)	~~0.01774~~ 0.0057	Yes

CGA205375	0.22 (at 28 d)	~~0.04038~~ 0.0259	Yes
GLOB1911F	7.365 (at 28 d)	~~0.7365~~ 0.2306	Yes
C-mineralisation			
Product/active substance	**Max. conc. with effects ≤ 25 % (mg/kg dw)**	**$PEC_{soil,\ accumulation}$ (5cm, no tillage) (mg/kg dw)**	**Risk acceptable?**
Difenoconazole	16.7 (at 28 d)	0.3193	Yes
CGA71019	0.353 (at 28 d)	~~0.01774~~ 0.0057	Yes
CGA205375	0.22 (at 28 d)	~~0.04038~~ 0.0259	Yes

9.9.3 Overall conclusions

As the $PEC_{soil,\ accumulation}$ of Difenoconazole and its metabolites and the formulation are all lower than the concentration at which no significant effects are detected, it can be concluded that the risk of GLOB1911F to soil micro-organisms is acceptable in accordance with the intended use.

9.10 Effects on non-target terrestrial plants (KCP 10.6)

zRMS Comments:

The new studies were submitted and accepted.

Toxicity effects of GLOB1911F formulation on the vegetative vigor and seedling emergence were tested.

The NOER for seedling emergence, survival of emerged plants, phytotoxicity and biomass is higher or equal than the highest tested application rate of 1.000 L GLOB1911F/ha for all tested plant species (Table 11).

Table 11: NOER for biomass reduction 21 DAE in seedling emergence and growth test with GLOB1911F

Test species	NOER [L GLOB1911F/ha]
Wheat	≥ 1.000
Onion	≥ 1.000
Lettuce	≥ 1.000
Carrot	≥ 1.000
White mustard	≥ 1.000
Tomato	≥ 1.000

DAE days after 50 % emergence in the control group
NOER No observed effect rate

The NOER for plant survival is higher or equal than the highest tested application rate of 1.000 L GLOB1911F/ha for all tested plant species (Table 8).

Table 8: NOER for plant survival 21 DAT in vegetative vigour test with GLOB1911F

Test species	NOER [L GLOB1911F/ha]
	Plant survival
Wheat	≥ 1.000
Onion	≥ 1.000
Lettuce	≥ 1.000
Carrot	≥ 1.000
White mustard	≥ 1.000
Tomato	≥ 1.000

DAT days after treatment
NOER No observed effect rate

In studies summary (Appendix 2) the relevant tables with particular observations were added.

An acceptable risk to non-target terrestrial plants is expected if the application of the GLOB1911F is in accordance with proposed use pattern.

No mitigation measure is required.

9.10.1 Toxicity data

Studies on the toxicity to non-target terrestrial plants have been carried out with Difenoconazole and its relevant metabolites. Full details of these studies are provided in the respective EU DAR and related documents.

Effects on non-target terrestrial plants of GLOB1911F were not evaluated as part of the EU assessment of Difenoconazole. New data submitted with this application are listed in Appendix 1 and summarised in Appendix 2.

The selection of studies and endpoints for the risk assessment deviates from the results of the EU review process.

Table 9.10-1: Endpoints and effect values relevant for the risk assessment for non-target terrestrial plants

Species	Substance	Exposure System	Results	Reference
Triticum aestivum, m *Allium cepa, m* *Lactuca sativa, d* *Daucus carota, d* *Sinapis alba, d* *Lycopersicon esculentum, d*	GLOB1911F	21 d Seedling emergence	No effect on seedling emergence and plant survival, no visible phytotoxic effects, no significant biomass reduction after pr-emergence appliction at rates of 0.063, 0.125, 0.250, 0.500, 1.0 L product/ha	Kästner K., 2020a 20 46 PSE 0002
Triticum aestivum, m *Allium cepa, m* *Lactuca sativa, d* *Daucus carota, d* *Sinapis alba, d*	GLOB1911F	21 d Vegetative vigour	No effect on plant survival, no visible phytotoxic effects, no significant biomass reduction after	Kästner K., 2020b 20 46 PVV 0002

Species	Substance	Exposure System	Results	Reference
Lycopersicon esculentum, d			appliction at rates of 0.063, 0.125, 0.250, 0.500, 1.0 L product/ha at BBCH stage 12-14	

m: monocotyledonous; d: dicotyledonous

9.10.1.1 Justification for new endpoints

As GLOB1911F is not identical to the reference formulation used during the EU Review of Difenoconazole, toxicity to non-target terrestrial plants from the formulation was also tested and used in the risk assessment.

9.10.2 Risk assessment

9.10.2.1 Tier-1 risk assessment (based screening data)

The two laboratory assays (Kästner K., 2020a and 2020b) can serve as screening data where a dose-response test was performed up to the maximum application rate of 1L GLOB1911F/ha (dose rates 0.063, 0.125, 0.250, 0.500, 1.0 L product/ha). No effect on seedling emergence and plant survival, no visible phytotoxic effects and no significant biomass reduction was observed for the six plant species at all dose rates. The highest tested dose rate of 1L product/ha equals the highest field application rate in use group potatoes for which a cGAP of 4 applications at 0.250 L product/ha is applied for. These results are considered as an indicator for an acceptable risk.

9.10.2.2 Tier-2 risk assessment (based on dose-response data)

Not required. Based on the screening data, there is no unacceptable risk.

9.10.2.3 Higher-tier risk assessment

Not relevant.

9.10.2.4 Risk mitigation measures

No risk mitigation needed.

9.10.3 Overall conclusions

First tier risk assessment indicates that there is no unacceptable risk from GLOB1911F for non-target plants when applied according to the proposed use rates.

9.11 Effects on other terrestrial organisms (flora and fauna) (KCP 10.7)

Not required.

9.12 Monitoring data (KCP 10.8)

Not relevant.

9.13 Classification and Labelling

The ecotoxicological classification of GLOB1911F was based on theoretical calculations according to Regulation 1272/2008 or based on own available data on the formulation.

Acute toxicity:

There is acute toxicity data available for the mixture GLOB1911F:

Pseudokirchneriella subcapitata: E_rC_{50} = 6.46 mg product/L and E_yC_{50} = 3.17 mg product/L (corresponding to E_rC_{50} = 2.92 mg a.i./L and E_yC_{50} = 1.43 mg a.i./L

Since the EC_{50} is > 1 mg/L, GLOB1911F **should not be classified for Aquatic Acute Tox**.

Chronic toxicity:

The active substance Difenoconazole is classified as Aquatic Chronic 1, H410. The summation method in accordance with EU Regulation 1272/2008 (CLP labelling) was applied. As GLOB1911F contains 43.36% of Difenoconazole, which has an E_bC_{50} of 0.032 mg/L for algae (M-factor = 10), the sum of components classified as Chronic Category 1 multiplied by the M-factor is higher than 25%. Therefore, GLOB1911F **should be classified as Aquatic Chronic 1, H410**.

The following classification is than proposed from an ecotoxicological point of view.

Pictogram:	GHS09
Signal word:	Warning
H-statements	
H410	Very toxic to aquatic life with long lasting effects.
P-statements	
P273	Avoid release to the environment
P391	Collect spillage.
P501	Dispose of contants/container to … in accordance with local/regional/national/international regulations (to be specified).

Other safety/precautionary phrases:

SP1:	Do not contaminate water with the product or its container.
EUH401	To avoid risks to human health and the environment, comply with the instructions for use.
SPe3:	

To protect aquatic organisms, the applicant proposes different mitigation measures:

Potato 4 x 0.125 kg a.s./ha:

- 10m vegetated buffer strip + 10 m non-sprayed buffer strip

Sugar beet 3 x 0.125 kg a.s./ha:

- 10m vegetated buffer strip+ 10 m non-sprayed buffer strip

Winter oilseed rape 2 x 0.125 kg a.s./ha:

- 10m vegetated buffer strip+ 10 m non-sprayed buffer strip

Spring oilseed rape 2 x 0.125 kg a.s./ha:

- 10m vegetated buffer strip+ 10 m non-sprayed buffer strip

~~A second possibility the applicant proposes, is to mention restriction sentence "To protect aquatic organisms from run-off in surface water do not apply on run-off endangered areas" on the label and following mitigation measures.~~

~~Potato 4 x 0.125 kg a.s./ha:~~

- ~~50% drift-reducing nozzles~~

~~Or~~

- ~~5m no-spray bufferzone~~

~~Sugar beet 2 x 0.125 kg a.s./ha:~~

- ~~75% drift-reducing nozzles~~

~~Or~~

- ~~5m no-spray bufferzone~~

~~Winter oilseed rape 2 x 0.125 kg a.s./ha:~~

- ~~75% drift-reducing nozzles~~

~~Or~~

- ~~5m no-spray bufferzone~~

~~Spring oilseed rape 2 x 0.125 kg a.s./ha:~~

- ~~75% drift-reducing nozzles~~

~~Or~~

- ~~5m no-spray bufferzone~~

zRMS Comments:	As a rule, all relevant scenarios Di and Ri are considered in risk assessment for aquatic organisms. None of scenario could be excluded.

Appendix 1 Lists of data considered in support of the evaluation

Tables considered not relevant can be deleted as appropriate.

MS to blacken authors of vertebrate studies in the version made available to third parties/public.

List of data submitted by the applicant and relied on

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner
KCP 10.2.1/01	Juckeland, D.	2020a	Effects of GLOB1911F on *Pseudokirchneriella subcapitata* in an algal growth inhibition test BioChem agrar, Labor für biologische und chemische Analytik GmbH Report number 20 48 AAL 0002 GLP Unpublished	N	Globachem NV
KCA 8.2.5.3/01	Eckenstein, H.	2014	Difenoconazole - Effects on the Development of Sediment-Dwelling Larvae of *Chironomus riparius* in Water-Sediment Systems with Spiked Sediment Harlan Laboratories Ltd, Zelgliweg 1, 4452 Itingen, Switzerland Report Number D81747. Syngenta File No. CGA169374_10839 GLP Unpublished	N	Syngenta*
KCP 10.3.1.1.1-10.3.1.1.2	Franke, M.	2020	Acute toxicity of GLOB1911F to the honeybee *Apis mellifera L.* under laboratory conditions BioChem agrar, Labor für biologische und chemische Analytik GmbH Report number 20 48 BAA 0011 GLP Unpublished	N	Globachem NV
KCP 10.3.1.1.1/02 10.3.1.1.2/02	Amsel, K.	2020	Acute toxicity of GLOB1911F to the bumblebee *Bombus terrestris L.* under laboratory conditions BioChem agrar, Labor für biologische und chemische Analytik GmbH Report number 20 48 BBA 0010 GLP Unpublished	N	Globachem NV
KCP 10.3.1.2	Dreβler, K.	2020	Chronic toxicity of GLOB1911F to the honeybee *Apis mellifera L.* under laboratory conditions BioChem agrar, Labor für biologische und chemische Analytik GmbH Report number 20 48 BAC 0003 GLP Unpublished	N	Globachem NV
KCP 10.3.1.3	Schmidt, K.	2020	GLOB1911F - Repeated exposure of honey bee larvae (*Apis mellifera L.)* under laboratory conditions	N	Globachem NV

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner
			BioChem agrar, Labor für biologische und chemische Analytik GmbH Report number 20 48 BLC 0004 GLP Unpublished		
KCP 10.3.2.2/01	Röhlig, U.	2020a	Effects of GLOB1911F on the predatory mite *Typhlodromus pyri* SCHEUTEN in an extended laboratory test BioChem agrar, Labor für biologische und chemische Analytik GmbH Report number 20 48 NTE 0001 GLP Unpublished	N	Globachem NV
KCP 10.3.2.2/02	Röhlig, U.	2020b	Effects of GLOB1911F on the parasitic wasp *Aphidius rhopalosiphi* (DESTEFANI-PEREZ) in an extended laboratory test BioChem agrar, Labor für biologische und chemische Analytik GmbH Report number 20 48 NAE 0001 GLP Unpublished	N	Globachem NV
KCP 10.3.2.2/03	Röhlig, U.	2020c	Effects of GLOB1911F on the carabid beetle *Poecilus cupreus L.* in an extended laboratory test BioChem agrar, Labor für biologische und chemische Analytik GmbH Report number 20 48 NLE 0001 GLP Unpublished	N	Globachem NV
KCP 10.3.2.2/04	Röhlig, U.	2020d	Effects of GLOB1911F on the green lacewing *Chrysoperla carnea* STEPH. in an extended laboratory test BioChem agrar, Labor für biologische und chemische Analytik GmbH Report number 20 48 NCE 0001 GLP Unpublished	N	Globachem NV
KCP 10.3.2.2/05	Röhlig, U.	2020e	Effects of GLOB1911F on the predatory mite *Typhlodromus pyri* SCHEUTEN in an extended laboratory test (under semi-field conditions aged residues) BioChem agrar, Labor für biologische und chemische Analytik GmbH Report number 20 48 NTR 0003 GLP Unpublished	N	Globachem NV
KCA 8.4.1-01 (summarized in KCP 10.4.1.1)	Sacker, D.	2009a	The effect of difenoconazole technical on the reproduction of *Eisenia fetida*. Chemex Environmental International Limited report ENV8407/070803 GLP	N	Globachem NV

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner
			Unpublished.		
KCA 8.4.1-02 (summarized in 10.4.1.1)	Sacker, D.	2009b	The effect of CGA205375 (difenoconazole metabolite 2) on the reproduction of *Eisenia fetida*. Chemex Environmental International Limited report ENV8401/050824 GLP Unpublished.	N	Globachem NV
KCP 10.4.1.1/01	Friedrich., S.	2020a	Effects of GLOB1911F on the reproduction of the earthworm *Eisenia Andrei* in artificial soil BioChem agrar, Labor für biologische und chemische Analytik GmbH Report number 20 48 TEC 0012 GLP Unpublished	N	Globachem NV
KCP 10.4.1.1/02	Servajean, E.	2009	Earthworm reproduction test with Difenoconazole 250 g/L EC (OECD 222, April 2004). Phytosafe report 09-99-048-ES GLP Unpublished	N	Globachem NV
KCP 10.4.1.2	Schulz, L.	2015	Effects of Difenoconazole 250 g/L EC on earthworms under field conditions BioChem agrar, Labor für biologische und chemische Analytik GmbH Report number 14 10 48 007 F GLP Unpublished	N	Globachem NV
KCP 10.4.2/01	Schulz, L.	2020a	Effects of GLOB1911F on the reproduction of the predatory mite *Hypoaspis aculeifer* BioChem agrar, Labor für biologische und chemische Analytik GmbH Report number 20 48 THC 0009 GLP Unpublished	N	Globachem NV
KCP 10.4.2/02	Friedrich., S.	2020b	Effects of GLOB1911F on the reproduction of the collembolan *Folsomia candida* BioChem agrar, Labor für biologische und chemische Analytik GmbH Report number 20 48 TCC 0011 GLP Unpublished	N	Globachem NV
KCP 10.5	Schulz, L.	2020b	Effects of GLOB1911F on the activity of soil microflora (Nitrogen transformation test) BioChem agrar, Labor für biologische und chemische Analytik GmbH Report number 20 48 SMN 0005 GLP Unpublished	N	Globachem NV
KCP	Kästner K.,	2020a	Effect of GLOB1911F on seedling emergence and	N	Globachem

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner
10.6.2/01			seedling growth of six non-target terrestrial plant species under greenhouse conditions BioChem agrar, Labor für biologische und chemische Analytik GmbH Report number 20 46 PSE 0002 GLP Unpublished		NV
KCP 10.6.2/02	Kästner K.,	2020b	Effect of GLOB1911F on vegetative vigour of six non-target terrestrial plant species under greenhouse conditions BioChem agrar, Labor für biologische und chemische Analytik GmbH Report number 20 46 PVV 0002 GLP Unpublished	N	Globachem NV

*Globachem NV has a Letter of Access to this study.

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

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

The following tables are to be completed by MS

List of data submitted by the applicant and not relied on

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

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

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

Appendix 2 Detailed evaluation of the new studies

A 2.1 KCP 10.1 Effects on birds and other terrestrial vertebrates

A 2.1.1 KCP 10.1.1 Effects on birds

A 2.1.1.1 KCP 10.1.1.1 Acute oral toxicity

A 2.1.1.2 KCP 10.1.1.2 Higher tier data on birds

A 2.1.2 KCP 10.1.2 Effects on terrestrial vertebrates other than birds

A 2.1.2.1 KCP 10.1.2.1 Acute oral toxicity to mammals

A 2.1.2.2 KCP 10.1.2.2 Higher tier data on mammals

A 2.1.3 KCP 10.1.3 Effects on other terrestrial vertebrate wildlife (reptiles and amphibians)

A 2.2 KCP 10.2 Effects on aquatic organisms

A 2.2.1 KCP 10.2.1 Acute toxicity to fish, aquatic invertebrates, or effects on aquatic algae and macrophytes

Comments of zRMS:	The study is considered acceptable; All validity criteria were met: (biomass increase: factor 63.8, required factor 16; mean coefficient of variation for section-by-section specific growth rates was 23.7%, required < 35%; coefficient of variation of average specific growth rates: 0.8% in controls, required < 7%) No deviations were observed. The following endpoints are based on nominal concentrations: 72 h EyC50 = 3.17 mg test item/L, corresponding to 1.43 mg a.s./L 72 h ErC50 = 6.46 mg test item/L, corresponding to 2.92 mg a.s./L

Reference:	KCP 10.2.1-01
Report	Effects of GLOB1911F on *Pseudokirchneriella subcapitata* in an algal growth inhibition test, Juckeland D., 2020a, report No 20 48 AAL 0002.
Guideline(s):	Yes (OECD 201)
Deviations:	No

GLP:	Yes
Acceptability:	YES

Executive summary

The purpose of this study was to evaluate effects of the test item on growth of the freshwater green alga *Pseudokirchneriella subcapitata* under static conditions and to determine the concentrations which resulted in 10, 20 and 50% inhibition of growth rate and yield (i.e. to derive EC_{10}, EC_{20} and EC_{50} values at 24, 48 and 72 hours). Moreover, the aim of the test was to estimate LOEC and NOEC values.

The test was performed according to the recommendations of the OECD Guideline 201 (2011).

Materials and methods

Test item:	GLOB1911F, Batch No.: BRN3030, active ingredient: Difenoconazole: 500 g/L (nominal) 521.5 g/L; 104.3% of declared (analysed)
Test species:	freshwater green alga – *Pseudokirchneriella subcapitata* KORSHICOV
Test system:	exposure of *Pseudokirchneriella subcapitata* to the test item applied once in test medium (static conditions)
Test conditions:	temperature: 22.6 – 22.7°C lighting: continuous illumination (on average 64 µE m^{-2} s^{-1})
Treatments:	control (untreated test medium) test item GLOB1911F
Test concentration :	0.453, 1.09, 2.60, 6.25, 15.0 mg/L test item equivalent to 0.205, 0.491, 1.18, 2.83, 6.78 mg/L a.s. (based on the analysed content)
Exposure time:	72 hours (static test procedure)
Biological observations:	biomass (number of cells): after 24, 48 and 72 hours
Statistics:	EC_x-values: Non-linear regression analysis LOEC/NOEC: Williams t-test, Welch's t-test; $p \leq 0.05$, one-sided smaller Statistical program: ToxRat Professional Version 3.3 (20.10.2018)
Dates of work:	biological phase: experimental start date: 28.01.2020 experimental completion date: 31.01.2020

analytical phase:
experimental start: 20.03.2020
experimental completion: 21.03.2020

Results and discussion

Measured concentrations of the test item in test solutions were within a range of 88 to 91% of nominal values at test start and after 72 hours the concentrations ranged from 87 to 94% in spent test solutions.

Therefore, the calculated study endpoints are based on nominal test concentrations for test item and the active substance Difenoconazole.

Table A1: Effects on growth rate and yield 72 hours after exposure start

Effect concentration	GLOB1911F, mg/L nominal	
	Average specific growth rate	Yield
	0 - 72 h after application	
NOEC		
test item	**0.453**	**0.453**
a.s.	**0.205**	**0.205**
LOEC		
test item	**1.09**	**1.09**
a.s.	**0.491**	**0.491**
EC_{10} and 95% confidence intervals (lower – upper)	E_rC_{10}	E_YC_{10}
test item	**1.79** (1.24 – 2.56)	**1.66** (1.45 – 1.89)
a.s.	**0.807** (0.563 – 1.16)	**0.749** (0.657 – 0.853)
EC_{20} and 95% confidence intervals (lower – upper)	E_rC_{20}	E_YC_{20}
test item	**2.78** (1.97 – 3.91)	**2.07** (1.83 – 2.35)
a.s.	**1.26** (0.893 – 1.77)	**0.936** (0.827 – 1.06)
EC_{50} and 95% confidence intervals (lower – upper)	E_rC_{50}	E_YC_{50}
test item	**6.46** (4.23 – 9.77)	**3.17** (2.71 – 3.69)
a.s.	**2.92** (1.91 – 4.42)	**1.43** (1.22 – 1.67)

Calculations were done using unrounded values, a.s. – active substance

Table A2: Observations 72 hours after exposure start

Treatment group	% Inhibition	
mg/L test item, nominal	Average specific growth rate	Yield
	0 - 72 h after application	
Control	-	-
0.453	-0.4[1]	-1.6[1]
1.09	1.9 +	7.7 +
2.60	9.9 +	34.2 +
6.25	58.3 +	92.6 +
15.0	72.3 +	96.6 +

+ significantly different from control (Welch's t-test, $p \leq 0.05$, one-sided smaller)
[1] negative values indicate a higher growth relative to that of the untreated control

All validity criteria were achieved.

- Biomass in controls increased exponentially by a factor of 63.8 (16 is required).
- The mean coefficient of variation for section-by-section specific growth rates in control cultures was 23.7% and did thereby not exceed 35% as required.
- The coefficient of variation of average specific growth rates during the whole test period of controls was 0.8% and did not exceed 7%.

Conclusion

A growth inhibition test was performed to assess the effects of the test item GLOB1911F (active substance = Difenoconazole) to green algae (*Pseudokirchneriella subcapitata*) during 72 hours of exposure.

Measured concentrations of the test item in test solutions were within a range of 88 to 91% of nominal values at test start and after 72 hours the concentrations ranged from 87 to 94% in spent test solutions.

After 72 hours the EC_{50} value for yield was 3.17 mg/L test item and the EC_{50} value for growth rate was 6.46 mg/L test item.

Comments of zRMS:	The study was evaluated and accepted (valid) for risk assessment at zonal level. No further action was taken. NOEC of 8.2 mg a.s./kg dw sediment was used in risk assessment for sediment dwelling organisms.

Reference:	KCA 8.2.5.3/01
Report	Difenoconazole - Effects on the Development of Sediment-Dwelling Larvae of Chironomus riparius in Water-Sediment Systems with Spiked Sediment, Eckenstein H., 2014, report No D81747. Syngenta File No. CGA169374_10839
Guideline(s):	Yes (OECD 218, 2004)
Deviations:	No
GLP:	Yes
Acceptability:	Yes

Executive summary

The effects of difenoconazole on the development of *Chironomus riparius* were determined under static conditions. Organisms were exposed to nominal concentrations of 5.0, 10, 20, 40 and 80 mg difenoconazole/kg dry sediment (initial measured concentrations 3.7, 8.2, 14, 28 and 66 mg difenoconazole/kg dry sediment, respectively) alongside a dilution water control and a solvent control. Based on initial measured concentrations, the 28 day EC50 for emergence ratio was 36 mg difenoconazole/kg dry sediment and the 28 day EC50 for male, female and pooled sexes development rate was >66 mg difenoconazole/kg dry sediment. The 28 day NOEC for emergence ratio was 14 mg difenoconazole/kg dry sediment, and for male, female and pooled sexes development rate were 8.2, 28 mg and 8.2 mg difenoconazole/kg dry sediment, respectively. Thus, the overall 28-day NOEC was 8.2 mg difenoconazole/kg dry sediment. The overall 28 day LOEC was 14 mg difenoconazole/kg dry sediment, due to a reduced development rate of the male midges.

Materials and methods

Test Material	
Description:	Difenoconazole tech CGA169374 tech
Lot/Batch #:	SMO3A0011
Purity:	96.6% w/w
Description:	Off white powder
Stability of test compound:	Stable under standard conditions
Reanalysis/Expiry date:	30 June 2015
Treatments	
Test concentrations:	Dilution water control, solvent control and nominal concentrations of 5.0, 10, 20, 40 and 80 mg difenoconazole/kg dry sediment (3.7, 8.2, 14, 28 and 66 mg difenoconazole/kg dry sediment, initial measured concentrations, respectively)
Solvent:	Acetone
Analysis of test concentrations:	Yes (0, 7 and 28 days) – based on measurement of difenoconazole using HPLC-MS/MS
Test organism	
Species:	*Chironomus riparius*, first instar (2-3 days old)
Source:	Continuous laboratory cultures, original source not reported
Feeding:	Fish food (Tetra Min®) suspension in test water at least three times per week until day 27, when all adult midges had emerged.
Test design	
Test vessels:	Glass vessels (600 mL, approximately 8 cm diameter) covered with lid containing mosquito net and containing 89 g of dry sediment and 250 mL of test medium
Test medium:	Reconstituted water (“M7 – medium”)
Artificial Sediment:	5% sphagnum peat (air dried and finely ground to ≤1 mm) 20% kaolin clay (content of Al_2O_3 35.5%) 75% Sihelco 36 sand (>99% of the particles between 90 and 250 µm) 0.35% Calcium carbonate The total organic carbon content of the final sediment mixture was 2.4%

Results and discussion

At all test concentrations, the difenoconazole concentrations in the test media one hour after application

ranged between 71 to 82% of the nominal values, and ranged between 70 to 85% at test termination (see table below). The Limit of Quantification (LOQ) for sediment and water analysis was 0.452 µg difenoconazole/kg dry sediment. Biological results are based on the initial measured difenoconazole concentrations, calculated as concentrations of the test item in the dry sediment.

Table A3: Analytical results

Day	Nominal concentration (mg difenoconazole/kg dry sediment)	Measured concentration (mg difenoconazole/kg dry sediment)	% of nominal
0 (fresh)	Solvent control	n.a.	n.a.
	5	3.66	73
	10	8.19	82
	20	14.4	72
	40	28.4	71
	80	65.7	82
7 (old)	Solvent control	n.a.	n.a.
	5	4.31	86
	10	8.97	90
	20	14.8	74
	40	32.6	82
	80	77.3	97
28 (old)	Solvent control	n.a.	n.a.
	5	4.26	85
	10	7.70	77
	20	14.4	72
	40	31.0	77
	80	56.0	70

n.a. not applicable
The tabulated values of the samples represent results obtained by calculation using the exact raw data
The effects of difenoconazole on *C. riparius* emergence and development are given in the table below.

Table A4: Effects of Difenoconazole on emergence and development of Chironomus riparius after 28 days exposure

Initial measured concentration (mg difenoconazole/kg dry sediment)	Number emerged	Mean emergence ratio (ERarc [a])	Mean development rate (males) (day^{-1})	Mean development rate (females)
Control	66	1.21 *	0.069 *	0.060 #
Solvent Control	59	1.05	0.068	0.063
Pooled Control	125	1.13	0.069	n.a.
3.7	62	1.09	0.068	0.060
8.2	58	1.03	0.068	0.060
14	56	0.99	0.065 ##	0.057
28	38	0.76 **	0.061 ##	0.056
66	15	0.41 **	0.063 ##	0.050 #

[a] - ERarc = arcsin-transformed emergence ratio
*: mean ERarc not statistically significantly different from the solvent control (based on a Student t-test, α = 0.05, two-sided)
**: mean ERarc statistically significantly lower than in the pooled control (results of a Williams t-test, α = 0.05, one-sided smaller)
#: Mean development rate statistically significantly different from the solvent control (based on a Student t-test, α = 0.05, two-sided)
##: Mean development rate statistically significantly lower than in the solvent control (for females) / in the pooled control (for males) (based on a Dunnett t-test, α = 0.05, one-sided smaller)
No signs of intoxication were observed in the larvae, pupae and emerged midges during the test at the initial measured concentration of 3.7 mg difenoconazole/kg dry sediment. At the initial measured concentrations of ≥8.2 mg difenoconazole/kg dry sediment, some dead emerged midges were observed at the water surfaces of the test vessels at Day 18. Dead emerged midges increased with ascending concentrations over time. Therefore, the dead

emerged midges were taken into account as substance related effect and were not included for the statistical analysis.
The NOEC, LOEC and EC_x data, based on initial measured concentrations, are tabulated below.

Table A5: Summary of the effects of difenoconazole on *Chironomus riparius* after 28 days exposure

Parameter	Emergence rate (arcsin-transformed) of pooled sexes (mg difenoconazole/ kg dry sediment	Development rate (mg difenoconazole /kg dry sediment)		
		Males	Females	Pooled sexes
EC_{50} 95% CI	36 31 – 43	>66 n.d.	>66 n.d.	>66 n.d.
EC_{20} 95% CI	17 14 – 20	>66 n.d.	>66 65 - >66	>66 n.d.
EC_{15} 95% CI	14 12 – 17	>66 64 - >66	62 48 - >66	>66 62 - >66
EC_{10} 95% CI	12 9.0 – 14	61 31 - >66	38 29 – 51	45 29 - >66
NOEC	14	8.2	28	8.2
LOEC	28	14	66	14

n.d. = could not be determined

Conclusion

Based on initial measured concentrations, the 28 day EC_{50} for emergence ratio was 36 mg difenoconazole/kg dry sediment and the 28 day EC_{50} for male, female and pooled sexes development rate was >66 mg difenoconazole/kg dry sediment. Monograph (DRAR) Volume III Chapter 9 **B9 (AS)** 97 **Difenoconazole** August 2018
The 28 day NOEC for emergence ratio was 14 mg difenoconazole/kg dry sediment, and for male, female and pooled sexes development rate were 8.2, 28 mg and 8.2 mg difenoconazole/kg dry sediment, respectively, hence the overall 28-day NOEC was 8.2 mg difenoconazole/kg dry sediment.
The overall 28 day LOEC was 14 mg difenoconazole/kg dry sediment due to a reduced development rate of the male midges.

A 2.2.2 KCP 10.2.2 Additional long-term and chronic toxicity studies on fish, aquatic invertebrates and sediment dwelling organisms

A 2.2.3 KCP 10.2.3 Further testing on aquatic organisms

A 2.3 KCP 10.3 Effects on arthropods

A 2.3.1 KCP 10.3.1 Effects on bees

A 2.3.1.1 KCP 10.3.1.1 Acute toxicity to bees

Comments of zRMS:	The studies consider acute oral and contact toxicity to bees. The studies are acceptable. The validity criteria in contact and oral toxicity tests were met: • mortality in the control groups: 0.0% mortality in both control group; should be ≤ 10%; • mortality in the reference item group: 100% mean mortality after 48 h of exposure; should be ≥ 50%. The studies for oral and contact toxicity were conducted according to OECD guideline 247 and 246, respectively **Oral test**. In the test item treatment 100.0 and 66.7% mortality occurred in the dose rates of 454.7 and 226.7 µg consumed product/bumblebee after 48 hours, which is statistically significant compared to the control. Low mortality of 10.0% was observed after oral consumption of 111.7 µg product/bumblebee and no mortalities were observed at the dose rates of 55.7 and 28.2 µg consumed product/bumblebee after 48 hours. In the acute oral toxicity test with GLOB1911F, the following endpoints were derived: • LD_{50} after 48 hours was > 186.7 µg product/bumblebee (equivalent to > 80.9 µg a.s./bumblebee) and • NOED was ≥ 111.7 µg product/bumblebee (equivalent to ≥ 48.4 µg a.s./bumblebee). **Contact test**. No mortality was observed and no behavioural effects of bumblebees were observed at all tested dose rates in the contact toxicity test. In the acute contact toxicity test with GLOB1911F, the following endpoints were derived: • LD_{50} after 48 hours was > 461.3 µg product/bumblebee (equivalent to > 200.0 µg a.s./bumblebee) and • NOED was ≥ 461.3 µg product/bumblebee (equivalent to ≥ 200.0 µg a.s./bumblebee). The endpoints were used in the risk assessment.

Reference: KCP 10.3.1.1.1/02 – KCP 10.3.1.1.2/02

Report	Acute toxicity of GLOB1911F to the bumblebee *Bombus terrestris L.* under laboratory conditions, Amsel K., 2020, report No 20 48 BAA 0010.
Guideline(s):	Yes (OECD 213 and 214)
Deviations:	No
GLP:	Yes
Acceptability:	Yes

Executive summary

The purpose of this study was to determine the acute toxicity of GLOB1911F to the honeybee *Apis mellifera* L. in a laboratory test after oral and contact exposure. The selected test design corresponds to the recommendations of the OECD Guidelines 213 and 214 (1998).
Data on the toxicity to *Apis mellifera* L. were generated to comply with international regulations.

Materials and methods

Test item:	GLOB1911F (Difenoconazole 500 SC) ; Batch No.: BRN3030 Content of active substance (a.s.): nominal analysed Difenoconazole: 500 g/L 521.5 g/L
Reference item:	Dimethoate EC 400 (Dimethoate: 411.20 g/L analysed content) at a dose rate of 10.0 µg dimethoate/bumblebee
Test species:	Bumblebee – *Bombus terrestris L.*: adult worker bumblebees derived from queen-right bumblebee hives; source: Biobest Belgium NV.
Test design:	In a 48 hours test, adults of *Bombus terrestris* were exposed to 5 dose rates of GLOB1911F in an appropriate carrier (0.5% TritonX solution) placed on the dorsal bumblebee thorax. In total, 3 treatment groups were set up: 2 control groups, 5 dose rates of the test item and 1 dose rate of the reference item with 30 replicates per dose and one bumblebee per replicate, respectively. Assessments of bumblebee mortality and behavioural effects were done after 4, 24 and 48 hours.
Endpoints:	Mortality, behavioural abnormalities
Dose rates [product/bee]	Test item: Contact test: 461.3, 230.6, 115.3, 57.7 and 28.8 µg product/bumblebee Oral test (offered): 461.6, 230.8, 115.4, 57.7 and 28.9 µg product/bumblebee Oral test (consumed): 454.7, 226.7, 111.7, 55.7 and 28.2 µg product/bumblebee
Dose rates [a.s./bee] Based on analysed content of a.s.	Test item: Contact test: 200.0, 100.0, 50.0, 25.0, 12.5, µg a.s./bumblebee Oral test (offered): 200.1, 100.1, 50.0, 25.0, 12.5, µg a.s./bumblebee Oral test (consumed): 197.2, 98.3, 48.4, 24.1, 12.2, µg a.s./bumblebee
Test conditions:	Temperature: 23.3 – 24.4 °C Relative humidity: 44 – 78% Illumination: constant darkness throughout the test (diffuse artificial

	Food: 50 % (w/v) sucrose solution
Statistics:	Descriptive statistics; Fisher's Exact Binomial test with Bonferroni Correction for mortality data (one-sided greater, α = 0.05). one sided greater for mortality data and determination of NOED (one-sided greater, □ = 0.05). Probit analysis using linear weighted regression for the determination of LD50 values along with 95% confidence limits.
	Calculation of LD50 values:
Test item:	contact: no LD_{50}-calculation due to no mortality
	oral: Spearman-Karber computation
Reference item:	contact: Probit analysis (linear weighted regression) oral: Probit analysis (linear maximum likelihood regression)
	Statistical significance of mortality values:
Test item:	Fisher's Exact Binominal Test with Bonferroni Correction ($p \leq 0.05$)
Reference item:	Fisher's Exact Binominal Test with Bonferroni Correction ($p \leq 0.05$)
Validity criteria	Control mortality (48 h): ≤ 10 % Reference item mortality (48 h): ≥ 50%
Experimental phase:	10 – 12 March 2020

Results and discussion

Contact test
After 48 hours, the control groups either treated with deionised water or 1 % tween solution demonstrated no mortality. In the test item treatment group, no mortality was observed after thoracic application of up to 461.3 µg GLOB1911F/bumblebee, after 48 hours.
Oral test
After 48 hours, the control group fed 50 % sucrose solution demonstrated no mortality. In the test item treatment group, statistically significant mortality of 50 % was observed after oral consumption of 186.7 µg GLOB1911F/bumblebee, after 48 hours.

Conclusion

The acute contact and oral toxicity of GLOB1911F was tested on bumblebees under laboratory conditions over 48 hours. The contact LD50 (48 h) was > 461.3.2 µg GLOB1911F/bumblebee that is corresponding to > 100.0 µg a.s./bumblebee. The oral LD50 (48 h) was 186.7 µg GLOB1911F/bumblebee that is corresponding to 100.0 µg a.s./ bumblebee.

A 2.3.1.1.1 KCP 10.3.1.1.1 Acute oral toxicity to bees

Comments of zRMS:	The studies consider acute oral and contact toxicity to bees. The study is acceptable. The validity criteria were met. The study was conducted according to OECD guideline 213 and 214.

	Oral test. In the test item treatment group, statistically significant mortality of 50 % was observed after oral consumption of 221.2 µg GLOB1911F/bee, after 48 hours. The oral LD50 (48 h) was 221.2 µg GLOB1911F/bee that is corresponding to 100.0 µg a.s./bee. **Contact test**. No mortality was observed. The contact LD50 (48 h) was > 221.2 µg GLOB1911F/bee that is corresponding to > 100.0 µg a.s./bee. The endpoints were used in the risk assessment.

Reference:	KCP 10.3.1.1.1 – 10.3.1.1.2
Report	Acute toxicity of GLOB1911F to the honeybee *Apis mellifera* L. under laboratory conditions, Franke M., 2020, report No 20 48 BAA 0011.
Guideline(s):	Yes (OECD 213 and 214)
Deviations:	No
GLP:	Yes
Acceptability:	Yes

Executive summary

The purpose of this study was to determine the acute toxicity of GLOB1911F to the honeybee *Apis mellifera* L. in a laboratory test after oral and contact exposure. The selected test design corresponds to the recommendations of the OECD Guidelines 213 and 214 (1998).
Data on the toxicity to *Apis mellifera* L. were generated to comply with international regulations.

Materials and methods

Test item: GLOB1911F (Difenoconazole 500 SC) ; Batch No.: BRN3030
Content of active substance (a.s.): nominal analysed
Difenoconazole: 500 g/L 521.5 g/L

Reference item: Dimethoate EC 400 (Dimethoate: 411.20 g/L analysed content)

Test species: Honeybee – *Apis mellifera* L. *iberiensis E*. (Hymenoptera, Apoidea): worker bees of a healthy and queen-right colony; female, adult worker bees (normally, at an age of 3 to 5 weeks) were collected in the morning before use; apiary: BioChem AGROLOGÍA S.L.U., Finca La Dehesilla, Ctra. A-362, Km. 4.7, P.O. Box 254, 41710 Utrera (Seville), Spain

Test design: <u>Test item:</u>
Contact test: 48-h; 2 control groups of deionised water, 1 % v/v tween solution; 5 dose rates of test item; 4 dose rates of the reference item; comprising 3 replicates per dose rate each of 10 bees, application volume: 2 µL/bee

Oral test: 48-h; 1 control group of 50 % w/v sucrose solution; 5 dose rates of test item; 4 dose rates of the reference item; comprising 3 replicates per dose rate each of 10 bees; application volume: 200 µL/cage by group feeding of 10 bees (corresponding to 20 µL/bee)

The mortality and the behaviour were assessed 4, 24, 48 hours after application for the contact and oral test

Endpoints:	Mortality, behavioural impairments	
Dose rates [product/bee]	Test item:	
	Contact test:	221.2, 110.6, 55.3, 27.7, 13.8 µg product/bee
	Oral test (offered):	221.2, 110.6, 55.3, 27.7, 13.8 µg product/bee
	Oral test (consumed):	221.2, 110.6, 55.3, 27.7, 13.8 µg product/bee*
Dose rates [a.s./bee] Based on analysed content of a.s.	Test item:	
	Contact test:	100.0, 50.0, 25.0, 12.5, 6.3 µg a.s./bee
	Oral test (offered):	100.0, 50.0, 25.0, 12.5, 6.3 µg a.s./bee
	Oral test (consumed):	100.0, 50.0, 25.0, 12.5, 6.3 µg a.s./bee*
	* based on the actual food uptake	
Test conditions:	Temperature: 24.3 – 26.9 °C (contact and oral) Relative humidity: 54.5 – 68.8 % (contact and oral) Illumination: constant darkness throughout the test (diffuse artificial light only during handling and assessments) Food: 50 % (w/v) sucrose solution (after application *ad libitum*)	
Statistics:	Statistical program used: ToxRat Professional 3.3.0 (2018)	
	Calculation of LD50 values:	
	Test item:	contact: no LD_{50}-calculation due to no mortality
		oral: Spearman-Karber computation
	Reference item:	contact: Probit analysis (linear weighted regression)
		oral: Probit analysis (linear maximum likelihood regression)
	Statistical significance of mortality values:	
	Test item:	Fisher's Exact Binominal Test with Bonferroni Correction ($p \leq 0.05$)
	Reference item:	Fisher's Exact Binominal Test with Bonferroni Correction ($p \leq 0.05$)
Validity criteria	Control mortality (48 h): ≤ 10 %	
	LD50 – value of the reference (24 h):	0.10 – 0.30 µg a.s./bee (contact) 0.10 – 0.35 µg a.s./bee (oral)
Experimental phase:	12 – 14 December 2019	

Results and discussion

Contact test

After 48 hours, the control groups either treated with deionised water or 1 % tween solution demonstrated no mortality. In the test item treatment group, no mortality was observed after thoracic

application of up to 221.2 µg GLOB1911F/bee, after 48 hours.

Oral test

After 48 hours, the control group fed 50 % sucrose solution demonstrated no mortality. In the test item treatment group, statistically significant mortality of 50 % was observed after oral consumption of 221.2 µg GLOB1911F/bee, after 48 hours.

Table A3: LD50-values of the contact and oral toxicity test

LD_{50} values	Contact toxicity test		Oral toxicity test[1]	
	24 h	48 h	24 h	48 h
LD_{50} [µg product/bee]	**> 221.2**	**> 221.2**	**221.2** (192.2 – 254.6)	**221.2** (192.2 – 254.6)
LD_{50} [µg a.s./bee]*	**> 100.0**	**> 100.0**	**100.0** (86.9 – 115.1)	**100.0** (86.9 – 115.1)

[1] Oral dose rates based on actual consumed doses; * based on analysed content of a.s.

The contact and oral LD_{50} (24 h) of the reference item was calculated to be 0.170 µg a.s./bee and 0.120 µg a.s./bee, respectively. All validity criteria have been met and are summarised in table below.

Table A4: Validity criteria of the acute honeybee study

Validity criterion		Occurred / calculated	Recommended
Control mortality (48 h)	Contact test: - deionised water - 1 % tween solution	0.0 % 0.0 %	≤ 10 %
	Oral test: - sucrose solution	0.0 %	≤ 10 %
LD_{50} value of the reference item (24 h)	Contact test	0.170 µg a.s./bee	0.10 – 0.30 µg a.s./bee
	Oral test	0.120 µg a.s./bee	0.10 – 0.35 µg a.s./bee

Conclusion

The acute contact and oral toxicity of GLOB1911F was tested on honeybees under laboratory conditions over 48 hours. The contact LD_{50} (48 h) was > 221.2 µg GLOB1911F/bee that is corresponding to > 100.0 µg a.s./bee. The oral LD_{50} (48 h) was 221.2 µg GLOB1911F/bee that is corresponding to 100.0 µg a.s./bee.

A 2.3.1.1.2 KCP 10.3.1.1.2 Acute contact toxicity to bees

See above under A 2.3.1.1.1 KCP 10.3.1.1.1.

A 2.3.1.2 KCP 10.3.1.2. Chronic toxicity to bees

Comments of zRMS:	The study was accepted. The validity criteria were met: • mortality in the control groups: 0.0% mortality in both control group AC and BC after 10 days of exposure; should be ≤ 15%; • mortality in the reference item group: 96.7% mean mortality after 10 days of exposure; should be ≥ 50%. The following endpoints were calculated:

	LDD_{50} = 65.8 µg formulation/bee/day (28.5 µg a.s./bee/day) NOED = 19.5 µg formulation/bee (8.47 µg a.s./bee) LC_{50} = 3.411 g formulation/kg diet (1.479 g a.s./kg diet) NOEC = 0.808 g formulation/kg diet (0.350 g a.s./kg diet)

Reference:	KCP 10.3.1.2
Report	Chronic toxicity of GLOB1911F to the honeybee *Apis mellifera* L. under laboratory conditions, Dreβler K., 2020, report No 20 48 BAC 0003.
Guideline(s):	Yes (OECD 245). OECD Guideline for the Testing of Chemicals: Honey bee (*Apis mellifera* L.), chronic oral toxicity test (10-day feeding) (adopted 9 October 2017)
Deviations:	No
GLP:	Yes
Acceptability:	Yes/No/Supplementary

Executive summary

In a 10-day chronic toxicity feeding test, max. 2 days old worker honey bees (*Apis mellifera* L. subspecies *iberiensis*) were exposed to a daily application of GLOB1911F diluted in the bee food (50% (w/v) aqueous sucrose solution + 0.1% (w/v) xanthan). The chronic oral toxicity of the test item was determined at nominal doses of 185, 103, 57.0, 31.7 and 17.6 µg product/bee/day (equivalent to 80.0, 44.5, 24.7, 13.8 and 7.65 µg a.i./bee/day), corresponding to concentrations of 4.699, 2.613, 1.453, 0.808 and 0.449 g product/kg food (equivalent to 2.037, 1.133, 0.630, 0.350 and 0.195 g a.i./kg food). Taking into account the actual food uptake and evaporated amount of feeding solution, the bees effectively consumed doses of 86.3, 53.2, 30.2, 19.5 and 12.4 µg product/bee/day (equivalent to 37.4, 23.1, 13.1, 8.47 and 5.37 µg a.i./bee/day).

An additional group of honey bees was exposed to a daily application of dimethoate diluted in the bee food (50% (w/v) aqueous sucrose solution) as toxic standard at a nominal dose of 27.3 ng a.i./bee/day.

Untreated 50% (w/v) aqueous sucrose solution and 50% (w/v) aqueous sucrose solution + 0.1% (w/v) xanthan served as controls.

Materials and methods

Test item:	GLOB1911F, Batch No.: BRN3030, active ingredient: Difenoconazole: 500 g/L (nominal) 521.5 g/L; 104.3% of declared (analysed) Density: 1.1532 g/ml
Reference item:	Danadim® Progress Content of a.i.: Dimethoate: 400 g/L (nominal); 411.20 g/L (analysed); Density: 1.069 g/mL
Test species:	*Apis mellifera* L. subspecies *iberiensis* (honey bee), max. 2 days old bees; derived from healthy and queen-right colonies; source: BioChem AGROLOGÍA S.L.U., Finca La Dehesilla, Ctra. A-362, Km. 4.7, P.O. Box 254, 41710 UTRERA (SEVILLA), SPAIN
Guideline:	OECD 245 (2017)

Deviations: None

Test design:	In a 10-day chronic toxicity feeding test, young adults of *Apis mellifera* L. (max. 2 days old) were continuously exposed to GLOB1911F diluted in the bee food (50% (w/v) aqueous sucrose solution + 0.1% (w/v) xanthan). The following treatment groups were set up: 5 doses of the test item, 1 untreated control group AC fed with 50% (w/v) aqueous sucrose solution, 1 untreated control group BC fed with 50% (w/v) aqueous s crose solution + 0.1% (w/v) xanthan and 1 dose of the toxic standard. For each treatment group, 3 replicates per dose and 10 bees per replicate were used. All feeding solutions were freshly prepared every day and provided *ad libitum*. Assessments of mortality, food consumption and behavioural abnormalities were conducted daily. In the analytical phase of the study, the concentration of active substance in the highest and lowest test item feeding solution applied on the first day of application was determined.
Endpoints:	Mortality, behavioural abnormalities
Test concentrations:	Control group AC: untreated food (50% (w/v) aqueous sucrose solution) Control group BC: untreated food (50% (w/v) aqueous sucrose solution + 0.1% (w/v) xanthan) Test item group: treated food at nominal doses of 185, 103, 57.0, 31.7 and 17.6 µg product/bee/day (equivalent to 80.0, 44.5, 24.7, 13.8 and 7.65 µg a.i./bee/day*) corresponding to concentrations of 4.699, 2.613, 1.453, 0.808 and 0.449 g product/kg food (equivalent to 2.037, 1.133, 0.630, 0.350 and 0.195 g a.i./kg food*) Effectively consumed doses: 86.3, 53.2, 30.2, 19.5 and 12.4 µg pro duct/bee/day (equivalent to 37.4, 23.1, 13.1, 8.47 and 5.37 µg a.i./bee/day*) *based on the nominal content of active ingredient Toxic standard: treated food at a nominal dose of 27.3 ng dimethoate/bee/day (corresponding to a concentration of 0.694 mg dimethoate/kg food)
Test conditions:	Temperature: 32.5 – 33.9 °C Relative humidity: 50.1 – 69.2% Photoperiod: Darkness (except during assessments) Food: 50% (w/v) aqueous sucrose solution
Statistics:	Statistical software used: ToxRat Professional 3.3.0 (2018) Step-down Cochran-Armitage Test Procedure for mortality data and determination of NOEDD/NOEC (one-sided greater, $\alpha = 0.05$). Weibull analysis using linear max. likelihood regression for the determination of LDDX and LCX values along with 95% confidence limits.

Dates of work:	
Experimental starting date (biological phase):	11 Feb 2020
Experimental completion date (biological phase):	21 Feb 2020
Experimental starting date (analytical phase):	06 Mar 2020
Experimental completion date (analytical phase):	06 Mar 2020

Results and discussion

After 10 days, a mortality of 0.0% was observed in control group AC. In viscosifier control group BC, a mortality of 0.0% was recorded as well. Taking into account the actual food uptake and evaporated amount of feeding solution, the bees effectively consumed doses of 86.3, 53.2, 30.2, 19.5 and

12.4 µg product/bee/day (equivalent to 37.4, 23.1, 13.1, 8.47 and 5.37 µg a.i./bee/day) which resulted in mortalities of 83.3, 20.0, 13.3, 0.0 and 0.0% after 10 days, respectively. Mortalities in the three highest test item doses (86.3, 53.2 and 30.2 µg consumed product/bee/day) are statistically significantly increased compared to the viscosifier control group BC (Step-down Cochran-Armitage Test Procedure, $\alpha = 0.05$, onesided greater).

The LDD_{50} was determined to be 65.8 µg consumed product/bee/day (equivalent to 28.5 µg consumed a.i./bee/day).
The LC_{50} was determined to be 3.411 g product/kg food (equivalent to 1.479 g a.i./kg food).
The NOEDD was determined to be 19.5 µg consumed product/bee/day (equivalent to 8.47 µg consumed a.i./bee/day).
The NOEC was determined to be 0.808 g product/kg food (equivalent to 0.350 g a.i./kg food)

The recovery rates of active ingredient in the test item feeding solutions were between +/-20% of the nominal concentrations. Therefore, the concentrations of active ingredient in the test item feeding solutions were verified and endpoints have been based on nominal concentrations. No residues of the active
ingredient difenoconazole were found in the control sample.

Behavioural abnormalities were observed in test item treatment groups AT and CT (86.3 and 30.2 µg consumed product/bee/day). Single bees were observed as being affected (uncoordinated movements) from day 6 onwards. During the final assessment on the last day of the test, one bee out of 26 remaining bees in test item treatment group CT was observed as being affected (uncoordinated movements). No other behavioural abnormalities were observed in any test item treatment group on any other assessment day.

In the test item group, the overall mean daily food consumption ranged between 18.4 and 27.6 mg feeding solution/bee/day which is 46.7% to 70.2% of the expected daily amount. In control group AC, the bees consumed on average 37.7 mg feeding solution/bee/day (=96.1% of the expected daily amount). In viscosifier control group BC, the bees consumed on average 38.3 mg feeding solution/bee/day (=97.5% of the expected daily amount). The food consumption per cage was corrected by subtracting the respective mean evaporation figure of the respective day of application.

The effective reference dosage in the study was 10.6 ng dimethoate/bee/day which resulted in a mean mortality of 96.7%.

All validity criteria for the study were met. Mortality in control groups AC and BC was < 15% and mortality in the reference item treatment group was > 50% after 10 days.

The results are summarised in the Table below.

Table A5: Mean mortality, behaviour of bees and toxicity of GLOB1911F after 10 days in the chronic toxicity feeding test

Treatment group	Treatment group ID	Daily dose nominal [µg product/bee/day]	Daily dose consumed[1] [µg product/bee/day]	Daily dose nominal [µg a.i./bee/day]	Daily dose consumed[1] [µg a.i./bee/day]	Concentration [g product/kg food]	Concentration [g a.i./kg food]	After 10 days Mean mortality absolute [%]	After 10 days Mean mortality corrected [%]	After 10 days Number of bees showing behavioural abnormalities[2]
Control	AC	-	-	-	-	-	-	0.0	-	0 out of 30
Viscosifier control	BC	-	-	-	-	-	-	0.0	-	0 out of 30
Test item	AT	185	86.3	80.0	37.4	4.699	2.037	83.3*	-	0 out of 5
	BT	103	53.2	44.5	23.1	2.613	1.133	20.0*	-	0 out of 24
	CT	57.0	30.2	24.7	13.1	1.453	0.630	13.3*	-	1 out of 26
	DT	31.7	19.5	13.8	8.47	0.808	0.350	0.0	-	0 out of 30
	ET	17.6	12.4	7.65	5.37	0.449	0.195	0.0	-	0 out of 30
		[ng product/bee/day]		[ng a.i./bee/day]		[mg product/kg food]	[mg a.i./kg food]			
Reference item	AR	70.9	27.6	27.3	10.6	1.805	0.694	96.7	-	1 out of 1

	Endpoints	After 10 days
Test item doses	LDD_{50} [µg consumed product/bee/day[1]][3]	**65.8** (58.1 – 73.7)
	LDD_{50} [µg consumed a.i./bee/day[1]][3]	**28.5** (25.2 – 31.9)
	NOEDD [µg consumed product/bee/day[1]][4]	**19.5**
	NOEDD [µg consumed a.i./bee/day[1]][4]	**8.47**
Test item concentrations	LC_{50} [g product/kg food][3]	**3.411** (2.955 – 3.889)
	LC_{50} [g a.i./kg food][3]	**1.479** (1.281 – 1.686)
	NOEC [g product/kg food][4]	**0.808**
	NOEC [g a.i./kg food][4]	**0.350**

Results are averages based on 3 replicates, containing 10 bees each; Calculations are performed with non-rounded values.
corrected: corrected mortality (according to SCHNEIDER-ORELLI 1947); Due to 0% mortality in both control groups, no correction is needed.

* Statistically significant difference in pairwise comparison between treatment and untreated viscosifier control group BC (Step-down Cochran-Armitage Test Procedure; $\alpha = 0.05$; one-sided greater)

1 Taking into account the actual food uptake and evaporation

2 Number of bees showing behavioural abnormalities referring to number of remaining bees

3 Median lethal dietary dose/concentration (95%-cl lower – upper) were calculated using Weibull analysis (linear max. likelihood regression)

4 No observed effect dietary dose/concentration were calculated using Step-down Cochran-Armitage Test Procedure ($\alpha = 0.05$; one-sided greater)

All validity criteria were met:

Mortality in the control group:	0.0% mean mortality in control group AC and BC after 10 days of exposure; validity criterion was met (≤ 15%)
Mortality in the reference group:	96.7% mean mortality after 10 days of exposure; validity criterion was met (≥ 50%)

Conclusion

The chronic oral toxicity of GLOB1911F on young adult honey bees (*Apis mellifera* L.) was investigated in a 10-day chronic, dose-response feeding study under laboratory conditions.

The LDD_{50} was determined to be 65.8 µg consumed product/bee/day (equivalent to 28.5 µg consumed a.i./bee/day).

The LC_{50} was determined to be 3.411 g product/kg food (equivalent to 1.479 g a.i./kg food).
The NOEDD was determined to be 19.5 µg consumed product/bee/day (equivalent to 8.47 µg consumed a.i./bee/day).
The NOEC was determined to be 0.808 g product/kg food (equivalent to 0.350 g a.i./kg food).

A 2.3.1.3 KCP 10.3.1.3 Effects on honey bee development and other honey bee life stages

Comments of zRMS:	The study was accepted. The validity criteria were met: • Larval mortality in the control: 0.0% for larvae across all control replicates (D3 - D8); • Adult emergence rate: 83.3% of honey bees across all control replicates (up to D22); • Larval mortality in the reference item treated group: 55.6% mortality (between D3 and D8) of larvae across all reference replicates. The following endpoints were derived: ED_{50} = 56.8 µg formulation/bee/day (24.6 µg a.s./larva). NOED = 17.8 µg formulation/bee (7.7 µg a.s./larva) EC_{50} = 359 mg formulation/kg diet (156 mg a.s./kg diet) NOEC = 112 g formulation/kg diet (49 mg a.s./kg diet) The dataset does not allow for calculation of reliable $ED_{10/20}$ and $EC_{10/20}$.

Reference:	KCP 10.3.1.3
Report	GLOB1911F - Repeated exposure of honey bee (Apis mellifera L.) larvae under laboratory conditions, Schmidt, K., 2020, report No 20 48 BLC 0004.
Guideline(s):	Yes (OECD 239, 2016)
Deviations:	No
GLP:	Yes
Acceptability:	Yes/No/Supplementary

Executive summary

In a test under laboratory conditions, honey bee larvae (*Apis mellifera* L.) were repeatedly exposed to GLOB1911F. The toxicity of the test item was determined at cumulative doses of 277.9, 111.2, 44.5, 17.8 and 7.1 µg product/larva (corresponding to 120.5, 48.2, 19.3, 7.7 and 3.1 µg a.i./larva). The concentrations of test item in the diets were 1757, 703, 281, 112 and 45 mg product/kg food (corresponding to 762, 305, 122, 49 and 19 mg a.i./kg food). Additionally, honey bee larvae were treated with Dimethoate tech. as reference item at a total dose of 7.6 µg dimethoate/larva or with an untreated diet as control.

Materials and methods

Test item: GLOB1911F (Difenoconazole 500 SC) ; Batch No.: BRN3030

Content of active substance (a.s.):	nominal	analysed
Difenoconazole:	500 g/L	521.5 g/L

Reference item: Dimethoate tech. (analysed purity: 98.8% ± 0.5%)

Test species:	*Honey bee – Apis mellifera iberiensis* Engel (Hymenoptera, Apoidea): first instar larvae; derived from three healthy and queen-right colonies; source: BioChem AGROLOGÍA S.L.U., Utrera (Seville), Spain
Test design:	One day old honey bee larvae (D1) of *Apis mellifera* L. were transferred from brood combs to polystyrene grafting cells in 48-well cell culture plates 2 days before start of the treatment. On 4 successive days (D3 to D6) the larvae were repeatedly exposed to GLOB1911F diluted in the larval food (aqueous sugar solution mixed with royal jelly). After the applications no additional feedings of the larvae took place. In total, 7 treatment groups were set up: 5 doses of the test item, one untreated control group and 1 dose of the reference item with 3 replicates per dose and 12 larvae per replicate, each. Assessments of cumulative larval mortality were performed on D4, D5, D6, D7 and D8. Additionally, other observations such as small body size or large quantities of remaining food on D8 were noted. Pupal mortality was assessed on D15 and emergence of adults was evaluated on D22.
	In an analytical phase of the study the concentration of the active ingredient in the test item stock solutions and in the control was determined.
Endpoints:	Successful adult emergence, mortality, qualitative observations: e.g. body size, remaining food.
Test concentrations:	Controls: ACA: untreated diet B/C (aqueous sugar solution + royal jelly)
	Test item: ATA: treated diet B/C at a concentration of 1757 mg product/kg food
	BTA: treated diet B/C at a concentration of 703 mg product/kg food
	CTA: treated diet B/C at a concentration of 281 mg product/kg food
	DTA: treated diet B/C at a concentration of 112 mg product/kg food
	ETA: treated diet B/C at a concentration of 45 mg product/kg food
	Reference: ARA: treated diet B/C at a concentration of 48 mg a.i./kg food
Test conditions:	Temperature: 34.1 °C – 34.9 °C
	Relative humidity: D1 - D8: 90.4 – 99.8%; D8-D15: 77.9 – 84.9%; D15-D22: 62.3 – 68.6%
	Photoperiod: Darkness (except during assessments)
	Food: aqueous sugar solution with royal jelly

Results and discussion

Toxicity of GLOB1911F to larvae of *Apis mellifera* L. after repeated exposure

Treatment group	Treatment ID	Dose	Concentration	On D8			On D15		On D22		
				Larval mortality D3 to D8 [%]		Mean OO [%]	Pupal mortality D8-D15 [%]		Total mortality D3-D22 [%]		Adult emergence rate [%]
		[µg product/ larva]	[mg product/ kg food]	abs.	corr.		abs.	corr.	abs.	corr.	abs.
Control	AC	-	-	0.0	-	0.0	8.3	0.0	16.7	0.0	83.3
Test item	AT	277.9	1757	86.1	-	0.0	100.0	100.0	100.0	100.0	0.0*
	BT	111.2	703	22.2	-	0.0	17.8	10.3	52.8	43.3	47.2*

	CT	44.5	281	8.3	-	0.0	24.2	17.4	52.8	43.3	47.2*
	DT	17.8	112	5.6	-	0.0	19.4	12.1	33.3	20.0	66.7
	ET	7.1	45	2.8	-	0.0	16.9	9.4	30.6	16.7	69.4
Refe-rence item	AR	[µg a.i./ larva] 7.6	[mg a.i./ kg food] 48	55.6	-	0.0	26.2	19.5	88.9	86.7	11.1

Treatment	**Endpoint: Successful adult emergence**	**Up to D22**
Test item doses	ED_{50} [µg product/larva] [2]	56.8 (43.3 – 74.5)
	NOED [µg product/larva] [1]	17.8
Test item concen-trations	EC_{50} [mg product/kg food] [2]	359 (273 – 471)
	NOEC [mg product/kg food] [1]	112

Results are averages based on 3 replicates, containing 12 larvae each; see Appendix 4 for details
corr.: corrected mortality (according to SCHNEIDER-ORELLI 1947): test and reference item treated goups were corrected by AC; negative values were set to "0"; calculations were performed with non-rounded values; CL: confidence limit; abs.: absolute mortality as counted from the results; OO: Other observations (*e.g.* remaining food);
* Statistically significant if compared to the control (Step-down Cochran-Armitage Test)
Average% of pupal mortality: Sum of dead larvae between D8 and D15 / Sum of living larvae on D8 x 100% (replicate wise)
[1] Step-down Cochran-Armitage Test; alpha=0.05; one sided greater
[2] Trimmed Spearman-Karber procedure

On D8, a larval mortality of 0.0% was observed in the control (AC). Pupal mortality (between D8 and D15) was 8.3% in the control. The control group showed a total mortality of 16.7% on D22. In the test item treated groups, larval mortalities ranged between 2.8 and 86.1% on D8. Pupal mortalities (D8-D15) ranged between 16.9 and 100.0% in the test item treatment groups. Total mortalities ranged between 30.6 and 100.0% on D22. Mortality in the reference item treated group (AR) was above 50% across all replicates on D8, being 55.6%.

On D8, none of the remaining larvae treated with test item, were observed to have food left and/or a smaller body size.

In the final assessment on D22, an adult emergence rate of 83.3% was determined for the honey bees in the control group (AC). In the test item treated groups, the adult honey bees emerged at rates ranging between 0.0% and 69.4% following an application of 277.9, 111.2, 44.5, 17.8 and 7.1 µg product/larva, respectively, during the larval stages. On D22, larvae treated with 277.9, 111.2 and 44.5 µg product/larva showed emergence rates, which were statistically significantly decreased if compared to the control.

The recoveries of active ingredient in the test item stock solutions A and E ranged between 90.1% and 111%. No test item was detected in the control specimen.

Because control mortality was ≤ 15% on D8, cumulative mortality in the reference item treatment group was ≥ 50% on D8 and adult emergence in the control was ≥ 70% on D22, the study can be regarded as valid.

Conclusion

In a repeated exposure larval toxicity study with GLOB1911F, the ED_{50} (adult emergence up to D22) was determined to be 56.8 µg product/larva, which is equivalent to an EC_{50} of 359 mg product/kg food. The dataset does not allow for calculation of reliable $ED_{10/20}$ and $EC_{10/20}$.

The NOED was 17.8 µg product/larva and the corresponding NOEC was 112 mg product/kg food.

A 2.3.1.4 KCP 10.3.1.4 Sub-lethal effects

A 2.3.1.5 KCP 10.3.1.5 Cage and tunnel tests

A 2.3.1.6 KCP 10.3.1.6 Field tests with honeybees

A 2.3.2 KCP 10.3.2 Effects on arthropods other than bees

A 2.3.2.1 KCP 10.3.2.1 Standard laboratory testing for non-target arthropods

A 2.3.2.2 KCP 10.3.2.2 Extended laboratory testing, aged residue studies with non-target arthropods

Comments of zRMS:	The extended laboratory study was accepted. The validity criteria were met: • mortality in the control group: ≤ 20 % (dead and escaped mites) on day 7; (observed: 1.0 %); • corrected mortality in the reference group: 50 – 100 % on day 7 (observed: 68.7 %); • reproduction in the control group: ≥ 4 eggs per female (observed: 6.42 eggs per female). The following endpoint was derived: LR_{50} = 0.534 L product/ha in 200 L water/ha.

Reference:	KCP 10.3.2.2-01
Report	Effects of GLOB1911F on the predatory mite *Typhlodromus pyri* SCHEUTEN in an extended laboratory test, Röhlig U., 2020a, report No 20 48 NTE 0001.
Guideline(s):	Yes, IOBC (BLÜMEL *et al.* 2000), modified for the exposure on natural substrate (extended laboratory test)
Deviations:	No
GLP:	Yes
Acceptability:	YES

Executive summary

An extended laboratory study was carried out to determine the effects of the test item GLOB1911F on the predatory mite *Typhlodromus pyri* SCHEUTEN (Acari: Phytoseiidae). For determination of mortality and reproduction, protonymphs of the mites were exposed to fresh, dry residues of GLOB1911F on bean leaf discs over 14 days. Effects on reproduction were assessed by the number of eggs laid and number of juveniles per evaluation period.

The study encompassed 7 treatment groups (5 test item rates, control, reference item), each with 5 replicates. 20 protonymphs per replicate were exposed to dried residues of GLOB1911F sprayed on bean leaf discs (*Phaseolus vulgaris)* at application rates of 0.300 – 0.450 – 0.675 – 1.013 – 1.519 L product/ha with a water volume corresponding to 200 L/ha. Additional test units were treated with deionised water for the water control and with DANADIM PROGRESS (active substance 411.2 g Dimethoate/L) as the reference item. Endpoints of the study were the mortality and additionally effects on reproduction.

After 7 days, in the water-treated control a mortality of 1.0 % was observed. In the test item treatments mortality ranged between 4.0 % and 95.0 %. This resulted in corrected mortality rates between 3.0 % and 94.9 %. No statistically significant effects on mortality were determined at a rate of 0.300 L product/ha compared to the control (Multiple Sequentially-rejective Chi2-2x2 Table test after BONFERRONI-HOLM test, $\alpha = 0.05$). The LR_{50} was estimated to be 0.534 L product/ha.

The reproductive capacity of the mites was assessed in the control group and the 0.300 L product/ha and 0.450 L product/ha test item. The reproduction rate amounted to 6.42 eggs/female in the control treatment. The reproduction rate in the both test item treated groups was 6.29 eggs/female and 3.03 eggs/female. Thus, an effect on reproduction of 2.0 % and 52.8 % was calculated for the test item treated groups compared to the control. No statistically significant effects on reproduction were determined at a rate of 0.300 L product/ha (WILLIAMS-t-test, $\alpha = 0.05$). The ER_{50} could not be calculated, this was estimated to be between 0.300 L product/ha and 0.450 L product/ha.

Materials and methods

Test item:	GLOB1911F, batch No.: BRN3030 analysed content of a.s.: Difenoconazole: 521.5 g/L (nominal 500 g/L)
Test species:	Predatory mite *Typhlodromus pyri* SCHEUTEN, protonymphs (< 24 hours old); source (in the stage of eggs): "Katz Biotech AG", An der Birkenpfuhlheide 10, 15837 Baruth, Germany
Test design:	Protonymphs were exposed to dried spray residues of different application rates of the test item applied on bean leaf discs (*Phaseolus vulgaris*). 7 treatment groups (5 test item rates, water treated control, reference item) were set up with 5 replicates (consisting of 20 protonymphs) per treatment. Exposure lasted until 14 days after application. Mortality assessments were carried out 3 and 7 days after exposure of the mites and additionally after 9, 11 and 14 days. In addition, for the control and the rates up to and including 0.450 L product/ha, the reproduction, i.e. number of eggs per female, was determined (3 assessments, 9, 11 and 14 days after application).
Endpoints:	Mortality after exposure over 7 days, including determination of a LR_{50} (Lethal Rate 50 %, rate resulting in 50 % mortality) Reproductive capacity of the surviving mites from day 7-14 including determination of an ER_{50} (Effect Rate 50 %, rate resulting in 50 % effect on reproduction)
Reference item:	DANADIM PROGRESS

(Dimethoate 411.2 g/L, nominal: 400 g/L)

Test rates:	Control (deionised water) Test item (GLOB1911F): 0.300 – 0.450 – 0.675 – 1.013 – 1.519 L product/ha The reference item was applied at a rate of 30 mL/ha. All substances were applied in 200 L water/ha. The substances were sprayed on bean via laboratory spraying equipment and air dried afterwards.
Test conditions:	Temperature: 23 °C - 27 °C Relative humidity: 63 % - 75 % Light-dark-cycle: 16 hours light : 8 hours dark; Light intensity: 1980 lx Food: pollen: pine (*Pinus nigra)* and birch (*Betula pendula*), 1:1
Statistics:	Multiple Sequentially-rejective Chi2-2x2 Table test after BONFERRONI-HOLM test ($\alpha = 0.05$) for mortality (test item) Chi2 2x2 Table test ($\alpha = 0.05$) for mortality (reference item) Probit analysis for LR_{50} calculation WILLIAMS-t-test ($\alpha = 0.05$) for reproductive capacity

Results and discussion

After 7 days, in the water-treated control a mortality of 1.0 % was observed. In the test item treatments mortality ranged between 4.0 % and 95.0 %. This resulted in corrected mortality rates between 3.0 % and 94.9 %. No statistically significant effects on mortality were determined at a rate of 0.300 L product/ha compared to the control (Multiple Sequentially-rejective Chi2-2x2 Table test after BONFERRONI-HOLM test, $\alpha = 0.05$). The LR50 was estimated to be 0.534 L product/ha.

The reproductive capacity of the mites was assessed in the control group and the 0.300 L product/ha and 0.450 L product/ha test item rates. The reproduction rate amounted to 6.42 eggs/female in the control treatment. The reproduction rate in the both test item treated groups was 6.29 eggs/female and 3.03 eggs/female. Thus, an effect on reproduction of 2.0 % and 52.8 % was calculated for the test item treated groups compared to the control. No statistically significant effects on reproduction were determined at a rate of 0.300 L product/ha (WILLIAMS-t-test, ($\alpha = 0.05$). The ER50 could not be calculated, this was estimated to be between 0.300 L product/ha and 0.450 L product/ha.

The results are summarized below.

Table A5: Effects on predatory mite *Typhlodromus pyri* exposed to fresh dry residues of GLOB1911F in an extended laboratory trial

Treatment	Rate [1] [L product/ha]	Mortality [2] [%]	Corrected mortality [3] [%]	Mean number of eggs per female [4] [7-14 Day]	Effect on Reproduction [5] [%]
Control	-	1.0	-	6.42	-
Test item	0.300	4.0 (n.s.)	3.0	6.29 (n.s.)	2.0
Test item	0.450	55.0*	54.5	3.03*	52.8
Test item	0.675	70.0*	69.7	n.d.	-
Test item	1.013	85.0*	84.8	n.d.	-
Test item	1.519	95.0*	94.9	n.d.	-
	Endpoint [L product/ha]				
LR_{50} [95 % CL]	0.534 [0.285-0.816]				
ER_{50}				> 0.300 ≤ 0.450	

[1] Application rate in 200 L water/ha
[2] Mortality after 7 days of exposure to residues on treated leaf discs. The results for mortality in individual test item treatments were compared to that in the control using the Multiple Sequentially-rejective Chi²-2x2 Table test after BONFERRONI-HOLM test (α = 0.05).
[3] Corrected mortality according to ABBOTT (1925)
[4] Results for reproduction compared by WILLIAMS-t-test (α = 0.05)
[5] Change in mean number of eggs per female, relative to control. A negative value indicates an increase relative to the control.
n.s. not statistically significant different compared to the control
CL: confidence limits

No unusual observations regarding behaviour were noted in the control and the test item treatment groups at any observation point during the test.

The reference item caused a mortality of 69.0 % of exposed mites, resulting in a corrected mortality of 68.7 %.

All validity criteria were met:

- Mortality in the control group: ≤ 20 % (dead and escaped mites) on day 7 (observed: 1.0 %)
- Corrected mortality in the reference group: 50 – 100 % on day 7 (observed: 68.7 %)
- Reproduction in the control group: ≥ 4 eggs per female (observed: 6.42 eggs per female)

Conclusion

In an extended laboratory study with GLOB1911F the LR50 for *Typhlodromus pyri* was calculated to be: LR50 = 0.534 L product/ha in 200 L water/ha. No unacceptable effects on reproduction of *Typhlodromus pyri* were observed at a rate of 0.300 L product/ha in 200 L water/ha. The ER50 could not be calculated, this was estimated to be between 0.300 L product/ha and 0.450 L product/ha.

Comments of zRMS:	The extended laboratory study was accepted. The validity criteria were met: • mortality in the control group: ≤ 10 % (48 hours) (observed: 3.3 %); • reproduction in the control group: ≥ 5 mummies per female (observed: 22.2); • corrected mortality in the reference item group: > 50 % (48 hours) (observed: 100 %). The following endpoint was derived: LR_{50} > 1.519 L product/ha in 400 L water/ha. NOER for mortality was ≥ 1.519 L product/ha. ER_{50} > 1.519 L product/ha in 400 L water/ha. NOER for reproduction was ≥ 1.519 L product/ha.

Reference:	KCP 10.3.2.2-02
Report	Effects of GLOB1911F on the parasitic wasp *Aphidius rhopalosiphi* (DESTEFANI-PEREZ) in an extended laboratory test, Röhlig U., 2020b, report 20 48 NAE 0001.
Guideline(s):	Yes, IOBC (Mead-Briggs *et al.* 2009), and taking account of the recommendations given by Grimm *et al.* (2001).
Deviations:	No
GLP:	Yes
Acceptability:	YES

Executive summary

An extended laboratory study was carried out to determine the effects of the test item GLOB1911F on the parasitic wasp *Aphidius rhopalosiphi* (Hymenoptera: Bracconidae). For determination of mortality and reproduction adult wasps were exposed to fresh, dry residues of GLOB1911F on potted barley plants. Effects on mortality were assessed by the number of surviving, affected, moribund and dead wasps, and effects on reproduction were assessed by the number of parasitised aphids (mummies) produced per female.

The study encompassed 7 treatment groups (5 test item rates, control, reference item), each with 6 replicates. Five females per replicate were exposed to dried residues of GLOB1911F sprayed on potted barley plants at application rates of 0.300 – 0.450 – 0.675 – 1.013 – 1.519 L product/ha with a water volume corresponding to 400 L/ha. Additional test units were treated with deionised water for the water control and with DANADIM PROGRESS (active substance 411.2 g Dimethoate/L) as the reference item. Endpoints of the study were the mortality (including determination of the LR50) and additionally effects on reproduction.

In the water-treated control a mortality of 3.3 % was observed. In the test item treatments mortality ranged between 0 % and 6.7 %. This resulted in corrected mortality rates between -3.4 % and 3.4 %. No statistically significant effects on mortality were determined in all test item treatments up to and including 1.519 L product/ha (Multiple Sequentially-rejective FISHER test after BONFERRONI-HOLM, $\alpha = 0.05$). The LR50 for GLOB1911F was estimated to be > 1.519 L product/ha in 400 L water/ha. The NOER (no observed effect rate) for mortality was ≥ 1.519 L product/ha.

The mean number of mummies per female in the test item treatments was between 22.1 and 23.4, and 22.2 mummies per female in the control. No statistically significant effects on reproductive capacity were determined in test item treatments up to and including 1.519 L product/ha (WILLIAMS-ttest, $\alpha = 0.05$). The ER50 for GLOB1911F was estimated to be > 1.519 L product/ha in 400 L water/ha. The NOER (no observed effect rate) for reproduction was ≥ 1.519 L product/ha.

Materials and methods

Test item:	GLOB1911F, batch No.: BRN3030 analysed content of a.s.: Difenoconazole: 521.5 g/L (nominal 500 g/L)
Test species:	Parasitic wasp *Aphidius rhopalosiphi* (DESTEFANI-PEREZ), adults (< 48 hours old) source (in the stage of mummies): "Katz Biotech AG", An der Birkenpfuhlheide 10, 15837 Baruth, Germany
Test design:	Exposure of the adults was achieved via air-dried spray residues on treated, potted barley plants. Seven treatment groups (5 test item rates, water treated control, reference item) were set up with 6 replicates (consisting of 5 females) per treatment. Mortality assessments were carried out 2, 24 and 48 hours after start of exposure of the wasps. At 48 hours, surviving wasps (15 females per treatment) were removed and their reproductive capacity was assessed by confining them individually over untreated wheat plants infested with adult and nymphal aphids (*Rhopalosiphum padi*). Assessment of reproduction capacity, i.e. number of mummies per female, was made for the control and all treated groups (1 assessment, 14 days after application).
Endpoints:	Mortality: number of dead wasps, including the determination of the LR50.

	Reproductive capacity: number of mummies per female, including the determination of the ER50.
Reference item:	DANADIM PROGRESS (Dimethoate 411.2 g/L, nominal: 400 g/L)
Test rates:	Control (deionised water) Test item (GLOB1809H): 0.300 – 0.450 – 0.675 – 1.013 – 1.519 L product/ha The reference item was applied at a rate of 10 mL/ha. All substances were applied in 400 L water/ha. The substances were sprayed on potted barley plants via laboratory spraying equipment and air dried afterwards.
Test conditions:	Temperature: 19-22 °C relative humidity: 60-76 % light-dark-cycle: 16 hours light, 8 hours dark light intensity: 1140 lux (mortality phase) 5620 lx (parasitisation phase) 7410 lx (reproduction phase) Food: 10 % w/w aqueous fructose solution
Statistics:	Multiple Sequentially-rejective FISHER test after BONFERRONI-HOLM (α = 0.05) for mortality (test item) FISHER`s Exact Binomial test (α = 0.05) for mortality (reference item) DUNNETT's-t-test (α = 0.05) for repellence (test item) WILLAMS t-test (α = 0.05) for reproductive capacity (test item)

Results and discussion

In the water-treated control a mortality of 3.3 % was observed. In the test item treatments mortality ranged between 0 % and 6.7 %. This resulted in corrected mortality rates between -3.4 % and 3.4 %. No statistically significant effects on mortality were determined in all test item treatments up to and including 1.519 L product/ha (Multiple Sequentially-rejective FISHER test after BONFERRONI-HOLM, α = 0.05). The LR50 for GLOB1911F was calculated to be > 1.519 L product/ha in 400 L water/ha. The NOER (no observed effect rate) for mortality was ≥ 1.519 L product/ha.

The mean number of mummies per female in the test item treatments was between 22.1 and 23.4, and 22.2 mummies per female in the control. No statistically significant effects on reproductive capacity were determined in all test item treatments (WILLIAMS-t-test, α = 0.05). The ER50 for GLOB1911F was destimated to be > 1.519 L product/ha in 400 L water/ha. The NOER (no observed effect rate) for reproduction was ≥ 1.519 L product/ha.

The results are summarised below.

Table A6: Effects on the parasitic wasp (*Aphidius rhopalosiphi*) exposed to GLOB1911F in an extended laboratory test

Treatment	Rate [1] [L product/ha]	Mortality [2] [%]	Corrected Mortality [3] [%]	Reproduction [4] [mean number of mummies/female]	Effects on reproduction [5] [%]
Control	-	3.3	-	22.2	-
Test item	0.300	3.3 (n.s.)	0	22.9 (n.s.)	-3.2
Test item	0.450	0 (n.s.)	-3.4	23.4 (n.s.)	-5.4
Test item	0.675	3.3 (n.s.)	0	22.1 (n.s.)	0.5
Test item	1.013	6.7 (n.s.)	3.4	22.2 (n.s.)	0
Test item	1.519	3.3 (n.s.)	0	23.1 (n.s.)	-4.1
	Endpoint [L product/ha]				
LR_{50}	> 1.519				
ER_{50}	> 1.519				

[1] Application rate in 400 L water/ha.
[2] Mortality after 48 hours of exposure to the test item on treated barley plants. The results for mortality in individual treatments were compared to that in the control using Multiple Sequentially-rejective FISHER test after BONFERRONI-HOLM ($\alpha = 0.05$).
[3] Corrected mortality according to ABBOTT (1925).
[4] Reproduction: mean number of parasitised aphids (mummies)/surviving female. The results were compared to the control by WILLIAMS-t-test ($\alpha = 0.05$).
[5] Change in mean number of mummies per female, relative to control. A positive value indicates a decrease and a negative value indicates an increase relative to the control.
n.s. not statistically significant different compared to the control

No unusual observations were noted in the control and all test item groups up to and including 1.519 L product/ha at any observation point during the test. There were no statistically significant differences in the behaviour (wasps settled on the plants as a criterion for repellence) in the test item groups up to and including 1.519 L product/ha compared to the control (DUNNETT's-t-test, $\alpha = 0.05$).

The reference item caused a mortality of 100 % of exposed wasps, resulting in a corrected mortality of 100 %.

All validity criteria were met:

- mortality in the control group: ≤ 10 % (48 hours) (observed: 3.3 %)
- reproduction in the control group: ≥ 5 mummies per female (observed: 22.2)
- corrected mortality in the reference item group: > 50 % (48 hours) (observed: 100 %)

Conclusion

In an extended laboratory study with GLOB1911F the LR50 for *Aphidius rhopalosiphi* was estimated to be > 1.519 L product/ha in 400 L water/ha. The NOER (no observed effect rate) for mortality was ≥ 1.519 L product/ha.
The ER50 for GLOB1911F was estimated to be > 1.519 L product/ha in 400 L water/ha. The NOER (no observed effect rate) for reproduction was ≥ 1.519 L product/ha.

Comments of zRMS:	The extended laboratory study was accepted. The validity criteria were met: • mortality in the control group (after 14 days): ≤ 6.7 % • corrected mortality in the reference group: 65 ± 35 % The following endpoint was derived: LR_{50} > 1.95 L product/ha in 400 L water/ha. NOER for mortality was ≥ 1.95 L product/ha. ER_{50} > 1.95 L product/ha in 400 L water/ha. NOER for food uptake was ≥ 1.95 L product/ha.

Reference:	KCP 10.3.2.2-03
Report	Effects of GLOB1911F on the carabid beetle *Poecilus cupreus* L. in an extended laboratory test, Röhlig U., 2020c, report 20 48 NLE 0001.
Guideline(s):	Yes, IOBC (Heimbach *et al.* 2000)
Deviations:	No
GLP:	Yes
Acceptability:	YES

Executive summary

An extended laboratory study was carried out to determine the effects of the test item GLOB1911F on the carabid beetle *Poecilus cupreus* L. (Coleoptera: Carabidae). For determination of the mortality adult beetles were exposed to fresh dried spray residues of the test item applied onto sandy soil (LUFA 2.1). Effects on mortality were assessed by the number of surviving beetles, additionally behavioural impacts (food uptake) were assessed.

The study encompassed 7 treatment groups (5 test item rates, control, reference item), each with 5 replicates. Three females and three males per replicate were exposed to dried residues of GLOB1911F sprayed onto sandy soil at rates of 0.300 – 0.450 – 0.675 – 1.013 – 1.519 L product/ha in 400 L/ha. Additional test units were treated with deionised water as control and with DANADIM PROGRESS (active substance 411.2 g Dimethoate/L) as reference item. Endpoints of the study were mortality and additionally effects on the food uptake.

After 14 days, in the water-treated control a mortality of 0 % was observed. In the test item treatments mortality was between 0 % and 3.3 %. This resulted in corrected mortality rates of 0 % and 3.3 %. No statistically significant effects on mortality were observed at all tested rates (Multiple sequentially-rejective FISHER test after BONFERRONI-HOLM, $\alpha = 0.05$). The NOER (no observed effect rate) for mortality was ≥ 1.519 L product/ha.

The food uptake (mean number of consumed fly pupae per surviving beetle during the total study period) was 10.90, 10.87, 10.93, 10.43 and 11.87 fly pupae in the test item treatment groups, in comparison to the control with 10.10 fly pupae. No statistically significant effects on food uptake were determined (WILLIAMS Multiple Sequential t-Test, $\alpha = 0.05$) at all tested rates. The NOER (no observed effect rate) for food uptake was ≥ 1.519 L product/ha.

Materials and methods

Test item: GLOB1911F, batch No.: BRN3030

	analysed content of a.i.: Difenoconazole: 521.5 g/L (nominal 500 g/L)
Test species:	Carabid beetle *Poecilus cupreus* L. adults (2-5 weeks old); source (in-house culture): in the laboratory of the test facility BioChem agrar GmbH
Test design:	Exposure of the adults was achieved via air-dried spray residues onto sandy soil (LUFA 2.1). Seven treatment groups (5 test item rates, water-treated control, reference item) were set up with 5 replicates (consisting of 3 females and 3 males) per treatment. Mortality and behavioural assessments were carried out 2 hours, 1, 2, 4, 7, 11 and 14 days after application. Assessment of food uptake, i.e. number of consumed fly pupae, was made for the control and the test item groups on 1, 2, 4, 7, 11 and 14 days after application.
Endpoints:	Mortality: number of dead beetles, including estimation of a LR50 Food uptake: number of consumed fly pupae per surviving beetle, including estimation of a ER50
Test rates:	Control (deionised water) Test item (GLOB1911F): 0.300 – 0.450 – 0.675 – 1.013 – 1.519 L product/ha in 400 L water/ha The reference item was applied at a rate of 2.25 L product/ha. All substances were applied in 400 L water/ha. The substances were sprayed onto sandy soil (LUFA 2.1) via laboratory spraying equipment and air dried afterwards.
Test conditions:	Temperature: 19 °C – 22 °C; relative humidity: 65 % - 73 % light-dark-cycle: 16 hours light : 8 hours dark; light intensity: 1040 lx Food: defrosted pupae of onion fly *Delia antiqua*
Statistics:	Multiple sequentially-rejective FISHER test after BONFERRONI-HOLM ($\alpha = 0.05$) for mortality (test item) FISHER's Exact Binomial test ($\alpha = 0.05$) for mortality (reference item) WILLIAMS Multiple Sequential t-Test ($\alpha = 0.05$) for food uptake (test item) STUDENT-t-test ($\alpha = 0.05$) for food uptake (reference item)

Results and discussion

After 14 days, in the water-treated control a mortality of 0 % was observed. In the test item treatments mortality was between 0 % and 3.3 %. This resulted in corrected mortality rates of 0 % and 3.3 %. No statistically significant effects on mortality were observed at all tested rates (Multiple sequentially-rejectiveFISHER test after BONFERRONI-HOLM, $\alpha = 0.05$). The NOER (no observed effect rate) for mortality was $\geq$ 1.519 L product/ha.

The food uptake (mean number of consumed fly pupae per surviving beetle during the total study period) was 10.90, 10.87, 10.93, 10.43 and 11.87 fly pupae in the test item treatment groups, in comparison to the control with 10.10 fly pupae. No statistically significant effects on food uptake were determined (Williams Multiple Sequential t-Test, $\alpha = 0.05$) at all tested rates. The NOER (no observed effect rate) for food uptake was ≥ 1.519 L product/ha.

The results are summarised below.

Table A7: Effects on the carabid beetle (*Poecilus cupreus*) exposed to fresh dry residues of GLOB1911F in an extended laboratory test

Treatment	Rate [1] [L product/ha]	Mortality [2] [%]	Corrected Mortality [3] [%]	Total number of consumed fly pupae	Food uptake [4] [mean number of consumed fly pupae/surviving beetle]		Effect on food uptake [5] [%]
					during the total study period	per assessment day	
Control	-	0	-	303	10.10	1.68	-
Test item	0.300	0 (n.s.)	0	327	10.90	1.82 (n.s.)	-8.3
Test item	0.450	0 (n.s.)	0	326	10.87	1.81 (n.s.)	-7.7
Test item	0.675	0 (n.s.)	0	328	10.93	1.82 (n.s.)	-8.3
Test item	1.013	3.3 (n.s.)	3.3	313	10.43	1.74 (n.s.)	-3.6
Test item	1.519	0 (n.s.)	0	356	11.87	1.98 (n.s.)	-17.9
	Endpoint [L product/ha]						
LR_{50}	> 1.519						
ER_{50}				> 1.519			
Reference item DANADIM PROGRESS	2.25	100*	100	11	0.37*	0.19*	88.7

[1] Application rate in 400 L water/ha
[2] Mortality after 14 days of exposure to residues on sandy soil. The results for mortality in individual treatments were compared to that in the control using Multiple sequentially-rejective FISHER test after BONFERRONI-HOLM ($\alpha = 0.05$) for the test item and FISHER's Exact Binomial test ($\alpha = 0.05$) for the reference item
[3] Corrected mortality according to ABBOTT (1925)
[4] Food uptake: mean number of consumed fly pupae/surviving beetle. The results for the test item treatments and control and the reference item treatment and control were compared by Williams Multiple Sequential t-Test (test item) and STUDENT-t-test, respectively ($\alpha = 0.05$).
[5] Change in mean number of consumed fly pupae per treatment group, relative to control. A negative value indicates an increase, relative to the control.
(n.s.) not statistically significant different compared to the control
* statistically significant different compared to the control

The reference item caused a mortality of 100 % of exposed beetles, resulting in a corrected mortality of 100 %.

All validity criteria were met:

- Mortality in the control group (after 2 weeks): ≤ 6.7 % (observed: 0 %)
- Corrected mortality in the reference item group (after 2 weeks): 65 ± 35 % (observed: 100 %)

Conclusion

In an extended laboratory study with GLOB1911F the LR50 for Poecilus cupreus was estimated to be > 1.95 L product/ha in 400 L water/ha. The NOER (no observed effect rate) for mortality was estimated to be ≥ 1.95 L product/ha in 400 L water/ha.
The ER50 for GLOB1911F was estimated to be > 1.95 L product/ha in 400 L water/ha. The NOER (no observed effect rate) for food uptake was estimated to be ≥ 1.95 L product/ha in 400 L water/ha.

Comments of zRMS:	The extended laboratory study was accepted. The validity criteria were met: • mortality in the control: ≤ 20 % (observed: 7.5 %); • mortality in the reference item group: > 50 % (observed: 67.5 %); • fecundity in the control: ≥ 15 (mean number of eggs/female and day; observed: 19.2); • fertility in the control: ≥ 70% (mean hatching rate; observed 74.5%). The following endpoint was derived: LR_{50} > 1.519 L product/ha in 200 L water/ha. NOER for reproduction was ≥ 1.519 L product/ha in 200 L water/ha.

Reference:	KCP 10.3.2.2-04
Report	Effects of GLOB1911F on the green lacewing *Chrysoperla carnea* STEPH. in an extended laboratory test, Röhlig U., 2020d, report 20 48 NCE 0001.
Guideline(s):	Yes, IOBC (Vogt *et al.* 2000), modified for the exposure on natural substrate (extended laboratory test)
Deviations:	No
GLP:	Yes
Acceptability:	YES

Executive summary

An extended laboratory study was carried out to determine the effects of the test item GLOB1911F on the green lacewing *Chrysoperla carnea* (Neuroptera: Chrysopidae). For determination of the mortality and reproduction, larvae were exposed to fresh, dry residues of GLOB1911F on bean leaves. Effects on mortality were assessed by the number of dead larvae and pupae and effects on reproduction were assessed by the number of eggs produced per female and the hatching rate.

The study encompassed 7 treatment groups (5 test item rates, control, reference item), each with 40 replicates. One larva per replicate was exposed to dried residues of GLOB1911F sprayed on bean leaves at application rates of 0.300 – 0.450 – 0.675 – 1.013 – 1.519 L product/ha with a water volume corresponding to 200 L/ha. Additional bean leaves were treated with deionised water for the water control and with DANADIM PROGRESS (active substance 411.2 g Dimethoate/L) as reference item. Endpoints of the study were the mortality (including determination of the LR50) and additionally effects on reproduction.

In the water-treated control a mortality of 7.5 % was observed. In the test item treatments mortality ranged between 5.0 % and 12.5 %. This resulted in corrected mortality rates between -2.7 % and 5.4 %. No statistically significant effects on mortality were determined in all test item treatment groups (Multiple Sequentially-rejective FISHER Test after BONFERRONI-HOLM, $\alpha = 0.05$). The LR50 for GLOB1911F was estimated to be > 1.519 L product/ha.

No effects on reproduction of Chrysoperla carnea occurred, when the test item was applied at rates up to and including 1.519 L product/ha. In the control and all test item treatments, the number of eggs per female per day was > 15 and the hatching rate was > 70 %.

Materials and methods

Test item:	GLOB1911F, batch No.: BRN3030 analysed content of a.s.: Difenoconazole: 521.5 g/L (nominal 500 g/L) Density: 1.1532 g/mL
Test species:	Green lacewing *Chrysoperla carnea* STEPH., larvae (2-3 days old) source: reared in the laboratory of the test facility
Test design:	Exposure of the larvae was achieved via air-dried spray residues on treated bean leaves. Seven treatment groups (5 test item rates, water treated control, reference item) were set up with 40 replicates (consisting of one larva per replicate) per treatment. Exposure lasted until pupae were transferred to oviposition units for development of adults. Mortality assessments were carried out regularly until hatching of the adult lacewings. In addition, for the control and all test item groups the reproductive performance, i.e. egg deposition and hatching rate, was determined (2 assessments/week, 24 h period each).
Endpoints:	Mortality including the estimation of a LR50 (Lethal Rate 50 %, rate resulting in 50 % mortality), Reproductive performance: number of produced eggs per female per day and hatching rate
Reference item:	DANADIM PROGRESS (Dimethoate 411.2 g/L, nominal: 400 g/L)
Test rates:	Control (deionised water) Test item GLOB1809H: 0.300 – 0.450 – 0.675 – 1.013 – 1.519 L product/ha The reference item was applied at a rate of 40 mL/ha. All substances were applied in 200 L water/ha. The substances were sprayed on bean leaves via laboratory spraying equipment and air dried afterwards.
Test conditions:	Temperature: 23 °C - 27 °C; relative humidity: 61 % - 74 % light-dark-cycle: 16 hours light : 8 hours dark; light intensity: 1120 lx Food: larvae: *Sitotroga cerealella* eggs (UV-sterilised); adults: artificial diet
Statistics:	Multiple Sequentially-rejective FISHER Test after BONFERRONI-HOLM ($\alpha = 0.05$) for mortality (test item) FISHER`s Exact Binomial Test ($\alpha = 0.05$) for mortality (reference item)

Results and discussion

In the water-treated control a mortality of 7.5 % was observed. In the test item treatments mortality ranged between 5.0 % and 12.5 %. This resulted in corrected mortality rates between -2.7 % and 5.4 %. No statistically significant effects on mortality were determined in all test item treatment groups (Multiple Sequentially-rejective FISHER Test after BONFERRONI-HOLM, α = 0.05). The LR50 for GLOB1911F was estimated to be > 1.519 L product/ha.

No effects on reproduction of Chrysoperla carnea occurred, when the test item was applied at rates up to and including 1.519 L product/ha. In the control and all test item treatments, the number of eggs per female per day was > 15 and the hatching rate was > 70 %.

The results are summarized below.

Table A8: Effects on the green lacewing *Chrysoperla carnea* exposed to GLOB1911F in an extended laboratory test

Treatment	Rate [1] [L product/ha]	Mortality [2] [%]	Corrected mortality [3] [%]	Reproduction [eggs/female/ day]	Hatching rate [%]
Control	-	7.5	-	19.2	74.5
Test item	0.300	5.0 (n.s.)	-2.7	19.0	74.7
Test item	0.450	7.5 (n.s.)	0	19.5	74.7
Test item	0.675	12.5 (n.s.)	5.4	19.5	74.6
Test item	1.013	7.5 (n.s.)	0	19.2	74.2
Test item	1.519	10.0 (n.s.)	2.7	19.3	74.3
	Endpoint [L product/ha]				
LR_{50}	> 1.519				

[1] Application rate in 200 L/ha
[2] Mortality: percentage of individuals, which did not reach maturity
[3] Corrected mortality according to ABBOTT (1925)
n.s. not statistically significant different compared to the control: Multiple Sequentially-rejective FISHER Test after BONFERRONI-HOLM (α = 0.05)

No unusual observations regarding behaviour were noted in the control and the test item treatment groups at any observation point during the test.

The reference item caused a mortality of 67.5 % of exposed lacewings, resulting in a corrected mortality of 64.9 %.

All validity criteria were met for this study:

- mortality in the control group: ≤ 20 % (observed: 7.5 %)
- mortality in the reference item group: ≥ 50 % (observed: 67.5 %)
- fecundity in the control (mean number of eggs/female and day): ≥ 15 (observed: 19.2)
- fertility in the control (mean hatching rate): ≥ 70 % (observed: 74.5 %)

Conclusion

In an extended laboratory study with GLOB1911F the LR50 for *Chrysoperla carnea* was estimated to be > 1.519 L product/ha in 200 L/ha. No unacceptable effects on reproduction of *Chrysoperla carnea* were observed, when the test item was applied at rates up to and including 1.519 L product/ha in 200 L/ha.

Comments of zRMS:	The extended laboratory study (under semi-field condition) was accepted. No study deviation was noted. The validity criteria were met: • mortality in the control group: ≤ 20% (dead or escape mites on day 7; observed: 2.0 % bioassay DAT 0 and DAT7); • reproduction in the control group: ≥ 4 eggs/female (observed: 6.76 eggs/female in bioassay DAT0 and 6.30 eggs/female in bioassay DAT7); • corrected mortality in the reference item group: 50 – 100% (on day 7) (observed: 75.5 % bioassay DAT0 and 71.4 % bioassay DAT7). No endpoint was derived. The effects on mortality and reproduction of the predatory mite *Typhlodromus pyri* exposed to freshly dried or aged spray residues on detached bean leaf discs at rates of 0.575 L product/ha and 0.675 L product/ha were below 50 %, at 0 and 7 days after treatment (DAT0 and DAT7).

Reference:	KCP 10.3.2.2-05
Report	Effects of GLOB1911F on the predatory mite *Typhlodromus pyri* SCHEUTEN in an extended laboratory test (under semi-field conditions aged residues), Röhlig U., 2020e, report No 20 48 ~~NTE~~–NTR 0003.
Guideline(s):	Yes, IOBC (BLÜMEL *et al.* 2000), modified for extended aged-residue conditions
Deviations:	No
GLP:	Yes
Acceptability:	Yes/No/Supplementary

Executive summary

An extended laboratory study with aged residues on plant surfaces was carried out to determine the effects and the duration of the residual activity of the test item GLOB1911F on the predatory mite *Typhlodromus pyri* SCHEUTEN (Acari: Phytoseiidae). For determination of mortality and reproduction, protonymphs of the predatory mites were exposed in the laboratory to fresh dried or under semi-field conditions aged residues of GLOB1911F, on detached bean leaves at two exposure times. Effects on mortality were assessed by the number of surviving, dead and escaped predatory mites. Effects on reproduction were assessed by the number of eggs laid per female and number of juveniles per evaluation period.

The study encompassed 4 treatment groups (2 test item rates, control, reference item) each with 5 replicates. 20 protonymphs per replicate were exposed to fresh dried or under semi-field conditions aged residues of the test item sprayed on potted bean plants (Phaseolus vulgaris), variety “Jutta”, at application rates of 0.575 L product/ha and 0.675 L product/ha with a water volume corresponding to 400 L/ha. Additional test plants were treated with deionised water for the water control in the same way like the test item groups. A reference item group with DANADIM PROGRESS (active substance 411.2 g Dimethoate/L) was treated on DAT0 under semi-field (outdoor) conditions. On DAT7, the reference item was freshly applied on excised untreated bean leaves under laboratory conditions. Endpoints of the study were the mortality and additionally effects on reproduction.

Exposure lasted until 14 days after the start of each bioassay. Mortality assessments were carried out 3 and 7 days after exposure of the mites and, additionally, after 7, 9, 11 and 14 days the number of males and females were counted. In addition, the reproduction, i.e. number of eggs per female, was determined (3 assessments, 9, 11 and 14 days after start of bioassay) for the control and the test item treatment. In the bioassay started on DAT0, in the water-treated control a mortality of 2.0 % was observed after 7 days. In the test item treatments mortality was 4.0 % at 0.575 L product/ha and 17.0 % at 0.675 L product/ha. This resulted in corrected mortality rates of 2.0 % at 0.575 L product/ha and 15.3 % at 0.675 L product/ha. No statistically significant effects on mortality were determined at the test item rate of

0.575 L product/ha compared to the control (Chi2 2x2 Table test, α = 0.05). In the bioassay initiated on DAT0, the toxic reference item caused a mortality of 76.0 % of the exposed mites after 7 days, resulting in a statistically significant corrected mortality of 75.5 % (Chi2 2x2 Table test, α = 0.05). In the bioassay started on DAT0 the reproduction rate in the 0.575 L product/ha test item treated group resulted in 6.70 eggs/female and in the 0.675 L product/ha test item treated group in 7.05 eggs/female, compared to 6.76 eggs/female in the control. Thus, an effect on reproduction of 0.9 % and -4.3 % were calculated for the test item treated groups compared to the control. No statistically significant effects on reproduction were observed at both test item treatment groups (WILLIAMS-t-test, α = 0.05).

In the bioassay started on DAT7, in the water-treated control a mortality of 2.0 % was observed after 7 days. In the test item treatments mortality was 2.0 % at 0.575 L product/ha and 9.0 % at 0.675 L product/ha. This resulted in corrected mortality rates of 0 % at 0.575 L product/ha and 7.1 % at 0.675 L product/ha. No statistically significant effects on mortality were determined at the test item rate of 0.575 L product/ha compared to the control (Chi2 2x2 Table test, α = 0.05). In the bioassay initiated on DAT7, the toxic reference item caused a mortality of 72.0 % of the exposed mites after 7 days, resulting in a statistically significant corrected mortality of 71.4 % (Chi2 2x2 Table test, α = 0.05).

In the bioassay started on DAT7 the reproduction rate in the 0.575 L product/ha test item treated group resulted in 6.76 eggs/female and in the 0.675 L product/ha test item treated group in 7.05 eggs/female, compared to 6.30 eggs/female in the control. Thus, an effect on reproduction of -7.3 % and -10.8 % were calculated for the test item treated groups compared to the control. No statistically significant effects on reproduction were observed at both test item treatment groups (WILLIAMS-t-test, α = 0.05).

Under extended laboratory conditions the effects on mortality and reproduction of the predatory mite *Typhlodromus pyri* exposed to freshly dried or aged spray residues on detached bean leaf discs at rates of 0.575 L product/ha and 0.675 L product/ha were below 50 %, at 0 and 7 days after treatment (DAT0 and DAT7).

Materials and methods

Test item:	GLOB1911F, batch No.: BRN3030 analysed content of a.s.: Difenoconazole: 521.5 g/L (nominal 500 g/L)
Test species:	Predatory mite *Typhlodromus pyri* SCHEUTEN, protonymphs (< 24 hours old); source (in the stage of eggs): "Katz Biotech AG", An der Birkenpfuhlheide 10, 15837 Baruth, Germany
Test design:	Protonymphs were exposed via freshly dried or aged residues of the test item on bean leaves. The test comprised 4 treatment groups (2 test item rates, water treated control, reference item on DAT0 and on DAT7, set up with 5 replicates (consisting of 20 protonymphs per replicate). Treatments were applied to potted bean plants using a spray equipment for commercial applications (plot-sprayer). For each bioassay the replicate leaves were gently cut to leaf discs, which were placed with the treated side upward on moistened cotton wool in Petri dishes.

	The ageing of spray residues on potted bean plants took place under semi-field (outdoor) conditions with rain protection (under a UVpermeable roof) from the application until the start of the respective bioassay. Exposure lasted until 14 days after start of each bioassay. Mortality assessments were carried out 3 and 7 days after exposure of the mites and additionally after 7, 9, 11 and 14 days after the number of females and males was counted. In addition, the reproduction, *i.e.* number of eggs per female, was determined (3 assessments, 9, 11 and 14 days after start of bioassay). Extended laboratory bioassays were initiated 0 and 7 days after the application (DAT0 and DAT7)
Endpoints:	Mortality: number of surviving, dead, escaped mites (trapped or not found) and after start of each bioassay over 7 days Reproduction: number of eggs laid and number of juveniles per evaluation period per female from day 7-14
Reference item:	DANADIM PROGRESS (Dimethoate 411.2 g/L, nominal: 400 g/L)
Test rates:	Control (deionised water): 400 L/ha Test item (GLOB1911F): 0.575 L product/ha in 400 L/ha of deionised water 0.675 L product/ha in 400 L/ha of deionised water Reference item (DANADIM PROOGRESS, 411.2.0 g Dimethoate/L): 200 mL product/ha (nominally equivalent to 80 g a.i./ha) in 400 L/ha of deionised water, DAT0) 30 mL product/ha (nominally equivalent to 12 g a.i./ha) in 400 L/ha of deionised water, DAT7)
Test conditions:	Temperature: 23 °C - 25 °C Relative humidity: 65 % - 73 % Light-dark-cycle: 16 hours light : 8 hours dark; Light intensity: 2010 - 2060 lx Food: pollen: pine (*Pinus nigra)* and birch (*Betula pendula*), 1:1
Statistics:	Multiple Sequentially-rejective Chi_2 2x2 Table test ($\alpha = 0.05$) for mortality (test item) Chi_2 2x2 Table test ($\alpha = 0.05$) for mortality (reference item) WILLIAMS-t-test ($\alpha = 0.05$) for reproduction ToxRat Professional 3.3.0 (RATTE 2018)

Results and discussion

In the bioassay started on DAT0, in the water-treated control a mortality of 2.0 % was observed after 7 days. In the test item treatments mortality was 4.0 % at 0.575 L product/ha and 17.0 % at 0.675 L product/ha. This resulted in corrected mortality rates of 2.0 % at 0.575 L product/ha and 15.3 % at 0.675 L product/ha. No statistically significant effects on mortality were determined at the test item rate of 0.575 L product/ha compared to the control (Chi_2 2x2 Table test, $\alpha = 0.05$). In the bioassay initiated on DAT0, the toxic reference item caused a mortality of 76.0 % of the exposed mites after 7 days, resulting in a statistically significant corrected mortality of 75.5 % (Chi_2 2x2 Table test, $\alpha = 0.05$).

In the bioassay started on DAT0 the reproduction rate in the 0.575 L product/ha test item treated group resulted in 6.70 eggs/female and in the 0.675 L product/ha test item treated group in 7.05 eggs/female, compared to 6.76 eggs/female in the control. Thus, an effect on reproduction of 0.9 % and -4.3 % were calculated for the test item treated groups compared to the control. No statistically significant effects on reproduction were observed at both test item treatment groups (WILLIAMS-t-test, $\alpha = 0.05$).

In the bioassay started on DAT7, in the water-treated control a mortality of 2.0 % was observed after 7 days. In the test item treatments mortality was 2.0 % at 0.575 L product/ha and 9.0 % at 0.675 L product/ha. This resulted in corrected mortality rates of 0 % at 0.575 L product/ha and 7.1 % at 0.675 L product/ha. No statistically significant

effects on mortality were determined at the test item rate of 0.575 L product/ha compared to the control (Chi^2 2x2 Table test, $\alpha = 0.05$). In the bioassay initiated on DAT7, the toxic reference item caused a mortality of 72.0 % of the exposed mites after 7 days, resulting in a statistically significant corrected mortality of 71.4 % (Chi^2 2x2 Table test, $\alpha = 0.05$).

In the bioassay started on DAT7 the reproduction rate in the 0.575 L product/ha test item treated group resulted in 6.76 eggs/female and in the 0.675 L product/ha test item treated group in 7.05 eggs/female, compared to 6.30 eggs/female in the control. Thus, an effect on reproduction of -7.3 % and -10.8 % were calculated for the test item treated groups compared to the control. No statistically significant effects on reproduction were observed at both test item treatment groups (WILLIAMS-t-test, $\alpha = 0.05$).

The results are summarized below.

Table A5: Effects on predatory mite *Typhlodromus pyri* exposed to fresh dry residues of GLOB1911F in an extended laboratory trial

Treatment	Rate [1]	Mortality [2] [%]	Corrected mortality [3] [%]	Reproduction [4] [mean number of eggs/female]	Effects on Reproduction [5] [%]
Bioassay initiated DAT0 [6]					
Control	-	2.0	-	6.76	-
Test item	0.575 L product/ha	4.0 (n.s.)	2.0	6.70 (n.s.)	0.9
Test item	0.675 L product/ha	17.0*	15.3	7.05 (n.s.)	-4.3
Reference item	200 mL product/ha	76.0*	75.5	-	-
Bioassay initiated DAT7 [6]					
Control	-	2.0	-	6.30	-
Test item	0.575 L product/ha	2.0 (n.s.)	0	6.76 (n.s.)	-7.3
Test item	0.675 L product/ha	9.0*	7.1	6.98 (n.s.)	-10.8
Reference item	30 mL product/ha	72.0*	71.4	-	-

Test item: GLOB1911F

[1] Application rate in 400 L water/ha
[2] Mortality: percentage of individuals (after 7 days of each exposure)
[3] Corrected mortality according to ABBOTT (1925)
[4] Reproduction: mean number of eggs per female.
[5] Change in mean numbers of eggs per female, relative to control. A positive value indicates a decrease and a negative value indicates an increase relative to the control.
[6] DAT = Days After Treatment (equivalent to days over which residues aged before bioassay was initiated)
n.s. not statistically significantly different compared to the corresponding control: Multiple Sequentially-rejective Chi^2 2x2 Table test ($\alpha = 0.05$) for mortality (test item) and WILLIAMS-t-test for reproduction
* statistically significantly different compared to the corresponding control: Multiple Sequentially-rejective Chi^2 2x2 Table test ($\alpha = 0.05$) for mortality (test item), hi^2 2x2 Table test ($\alpha = 0.05$) for mortality (reference item)

No unusual observations regarding behaviour were noted in the control and the test item treatment groups at any observation point during the test.

Conclusion

Under extended laboratory conditions the effects on mortality and reproduction of the predatory mite *Typhlodromus pyri* exposed to freshly dried or aged spray residues on detached bean leaf discs at rates of 0.575 L product/ha and 0.675 L product/ha were below 50 %, at 0 and 7 days after treatment (DAT0 and DAT7).

A 2.4 KCP 10.4 Effects on non-target soil meso- and macrofauna

A 2.4.1 KCP 10.4.1 Earthworms

A 2.4.1.1 KCP 10.4.1.1 Earthworms - sub-lethal effects

Comments of zRMS:	The study was evaluated and accepted (valid) for risk assessment at zonal level. No further action was taken. The NOEC for mortality, biomass and reproduction was determined to be 1.0 mg test item/kg soil dry weight. The 56-d EC_{50} value for reproduction were estimated to be 1.0 mg test item/kg soil dry weight; $NOEC_{corr}$ = 0.5 mg/kg dw.

This study was already submitted in support of the authorisation of product DIFCOR 250 EC and was positively evaluated.

Reference:	KCA 8.4.1-01
Report	The effect of difenoconazole technical on the reproduction of *Eisenia fetida*, Sacker D., 2009a, report No ENV8407/070803.
Guideline(s):	Yes (OECD 222)
Deviations:	No
GLP:	Yes
Acceptability:	YES

Executive summary

This report contains a description of the methods used and the results obtained during a study to investigate the effects on reproduction of *Eisenia fetida* by Difenoconazole Technical. The test was conducted as a limit test, therefore the objective of this study was to determine whether Difenoconazole Technical caused a significant reduction in reproduction of *Eisenia fetida* after a 56 day incubation period at 22± 2 °C.
The test was performed according to the recommendations of the OECD Guideline 222.

Materials and methods

Test item:	Difenoconazole Technical
Test species:	*Eisenia fetida*
Test system:	Exposure of worms to the test item mixed into artificial soil substrate (5% peat)
Reference item:	Carbendazim
Test conditions:	Temperature: 22± 2 °C.°C

	Light intensity: 400-800 lux Photoperiod: light : dark = 16 h : 8 h
Treatments:	control (untreated test medium) test item Difenoconazole Technical
Test concentration :	1.0 mg/kg test item
Exposure time:	28 days
Biological Assays:	Counting and weighing of surviving earthworms after 28 days. At the end of the incubation time, counting of juvenile worms, recording of any behavioural or pathological abnormalities.
Statistics:	The NOEC and EC_{50} value was estimated and where possible the 95% confidence limits calculated using ToxCalc version 5.0.

Results and discussion

There was no statistical difference between the test item and the control for any of the tested parameters. The EC_{50} for mortality and reproduction amounts to 1 mg/kg dw and the NOEC for both parameters is 1 mg/kg dw.

No pathological symptom or behavioural changes were noted among the surviving worms.

Table A9: Findings for Toxicity to earthworms

Concentration	Mean % mortality of the adults at the end of exposure phase (day 28)	Weight change of adults surviving at day 28 (% of intitial weight)	Mean number of juveniles at the end of the test (day 55)
Control	6.25 %	101.21	84
Test item			
1 mg/kg	2.5 %	99.96	54

A separate test was conducted with carbendazim to show the sensitivity of the study. At a concentration of 2 mg carbendazim per kg artificial sediment, a 91% reduction in the number of juveniles produced was recorded compared to the control. The test guideline states that a significant effect should be demonstrated at a concentration between 1 and 5 mg/kg which has been achieved in this study.

Conclusion

Difenoconazole technical had no sublethal effects on earthworms when applied at 1 mg/kg soil.

Comments of zRMS:	The study was evaluated and accepted (valid) for risk assessment at zonal level. No further action was taken. The NOEC for mortality, biomass and reproduction was determined to be 1.0 mg test item/kg soil dry weight. The 56-d EC_{50} value for reproduction were estimated to be 1.0 mg test item/kg soil dry weight; $NOEC_{corr}$ = 0.5 mg/kg dw.

This study was already submitted in support of the authorisation of product DIFCOR 250 EC and was positively evaluated.

Reference:	KCA 8.4.1-02
Report	The effect of CGA205375 (Difenoconazole Metabolite 2) on the reproduction of *Eisenia fetida*, Sacker D., 2009b, report No ENV8401/050824.
Guideline(s):	Yes (OECD 222)
Deviations:	No
GLP:	Yes
Acceptability:	YES

Executive summary

This report contains a description of the methods used and the results obtained during a study to investigate the effects on reproduction of *Eisenia fetida* by CGA205375 (Difenoconzaolz Metabolite 2). The test was conducted as a limit test, therefore the objective of this study was to determine whether CGA205375 caused a significant reduction in reproduction of *Eisenia fetida* after a 56 day incubation period at 22± 2 °C.
The test was performed according to the recommendations of the OECD Guideline 222.

Materials and methods

Test item:	CGA205375 (Difenoconazole Metabolite 2)
Test species:	*Eisenia fetida*
Test system:	Exposure of worms to the test item mixed into artificial soil substrate (5% peat)
Reference item:	Carbendazim
Test conditions:	Temperature: 22± 2 °C.°C Light intensity: 400-800 lux Photoperiod: light : dark = 16 h : 8 h
Treatments:	control (untreated test medium) test item CGA205375 (Difenoconzaolz Metabolite 2)
Test concentration :	1.0 mg/kg test item
Exposure time:	28 days
Biological Assays:	Counting and weighing of surviving earthworms after 28 days. At the end of the incubation time, counting of juvenile worms, recording of any behavioural or pathological abnormalities.

Statistics:	The NOEC and EC_{50} value was estimated and where possible the 95% confidence limits calculated using ToxCalc version 5.0.

Results and discussion

Table A10: Findings for Toxicity to earthworms

Test substance	Metabolite CGA 205375
Test object	*Eisenia fetida*
Exposure	28 days exposure + 28 days incubation
56 day EC_{50} NOEC	>1 mg/kg soil 1 mg/kg soil

No pathological symptom or behavioural changes were noted among the surviving worms.

Conclusion

The metabolite CGA 205375 had no sublethal effects on earthworms when applied at 1 mg/kg soil.

Comments of zRMS:	The study was evaluated and accepted. The validity criteria were met: • Adult mortality: ≤ 10 % (being 0 % after 4 weeks); • Number of juveniles per replicate: ≥ 30 (being 199 to 251); • Coefficient of variation of reproduction: ≤ 30 % (being 9.1 %). The following endpoints were calculated: • NOEC for reproduction = 16.45 mg product/kg dw (equivalent to 7.44 mg a.s./kg dw) ($NOEC_{corr}$ = 8.225 mg prod./kg dw; $NOEC_{corr}$ = 3.72 mg a.s./kg dw);

Reference:	KCP 10.4.1.1/01
Report	Effects of GLOB1911F on the reproduction of the earthworm *Eisenia andrei* in artificial soil, Fiedrich S., 2020a, report 20 48 TEC 0012.
Guideline(s):	Yes, OECD 222 (2016)
Deviations:	No
GLP:	Yes
Acceptability:	YES

Executive summary

The purpose of this study was to determine potential effects of the test item on reproduction, mortality and growth of the earthworm *Eisenia andrei* by dermal and alimentary uptake using an artificial soil in a laboratory test.
The test was performed according to the recommendations of the OECD Guideline 222 (2016).

Materials and methods

Test item:	GLOB1911F , Batch No.: BRN3030 Content of a.i.:

	difenoconazole 500 g/L (nominal), 521.5 g/L (analysed)
Test species:	*Eisenia andrei* (BOUCHÉ, 1972)
Test design:	Effects on earthworms: 56 days; 8 test item treatment groups and an untreated control group, 8 replicates in the control group and 4 replicates in the test item treatment, 10 worms per replicate; assessment of adult worm mortality, behavioural effects and biomass development after 28 days, reproduction rate after an additional 28 days (assessed 56 days after application)
Test system:	Exposure of worms to different concentrations of the test item mixed into artificial soil substrate (with 10 % peat)
Reference item:	Maypon Flow (Carbendazim, SC 500) The effects of the reference item were investigated in a separate study.
Test conditions:	Temperature: 19.8-21.7 °C Light intensity: 590 lux Photoperiod: light : dark = 16 h : 8 h
Treatments:	Control (untreated), test item (GLOB1911F)
Test concentrations: (spacing factor: 1.8)	1.57, 2.82, 5.08, 9.14, 16.45, 29.61, 53.30, 95.95 mg test item/kg soil dry weight analysed equivalent to 0.71, 1.28, 2.30, 4.13, 7.44, 13.39, 24.11, 43.39 mg a.i./kg soil dry weight
Dates of work:	Experimental start date: 30 January 2020 Experimental completion date: 26 March 2020
Statistics:	Williams-t-test for biomass change and reproduction (α = 0.05, one-sided smaller), 3-parametric normal cumulative distribution function (CDF) for calculation of ECx; Statistical program: ToxRat Professional 3.2.1 (Ratte 2015)

Results and discussion

At the start of the test, earthworm fresh weight ranged from 250 – 410 mg/worm. The physico-chemical parameters measured at the start and at the end of the tests met the guideline requirements.

The mean biomass change of adult worms ranged from 27.3 % to 32.6 % in the test item treated groups and 31.7 % in the control group. The test item caused no statistically significant change in biomass (change in fresh weight after 4 weeks relative to initial fresh weight) compared to the control group at any concentration tested (Williams-t-test, α = 0.05, one-sided smaller).

No mortality was recorded in the test item treatment groups and in the control. No effects on behaviour (including feeding activity) of the worms were observed during the test.

Statistically significant effects (Williams-t-test, α = 0.05, one-sided smaller) on the number of juveniles compared to the control group were recorded at concentrations of 29.61, 53.30 and 95.95 mg test item/kg soil d.w. (analysed equivalent 13.39, 24.11 and 43.39 mg a.i./kg soil dry weight).

The NOEC for mortality and change of biomass was determined to be 95.95 mg test item/kg soil dry weight (analysed equivalent to 43.39 mg a.i./kg soil dry weight). The NOEC for reproduction was determined to be 16.45 mg test item/kg soil dry weight (analysed equivalent to 7.44 mg a.i./kg soil dry weight). The EC10, EC20 and EC50 values for reproduction were calculated to be 17.64, 24.59 and 46.43 mg test item/kg soil dry weight (analysed equivalent to 7.98, 11.13 and 21.01 mg a.i./kg soil dry weight), respectively.

Results are summarised in table below.

Table A11: Effects of GLOB1911F on *Eisenia andrei* in a 56-day reproduction study

Endpoint	Treatment group (mg test item/kg soil d.w.)								
	Control	1.57	2.82	5.08	9.14	16.45	29.61	53.30	95.95
Mortality of adult worms after 4 weeks (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mean biomass change after 4 weeks (%)	31.7	32.6	29.3	32.1	28.7	30.9	31.0	27.3	31.0
Mean number of juveniles after 8 weeks	220.5	215.5	211.0	222.5	226.5	198.8	174.8*	67.3*	58.8*
Reduction of reproduction compared to control (%)	-	2.3	4.3	-0.9	-2.7	9.9	20.7	69.5	73.4

	Endpoint (mg test item/kg soil d.w.)	Endpoint (mg a.i./kg soil d.w.)
NOEC (mortality) [1]	95.95	43.39
NOEC (biomass)	95.95	43.39
NOEC (reproduction)	16.45	7.44
LC_{50} (mortality) [1]	> 95.95	> 43.39
EC_{10} (reproduction) [2]	17.64 (95 % confidence limits 14.68 – 20.78)	7.98 (95 % confidence limits 6.64 – 9.40)
EC_{20} (reproduction) [2]	24.59 (95 % confidence limits 21.39 – 27.95)	11.13 (95 % confidence limits 9.68 – 12.65)
EC_{50} (reproduction) [2]	46.43 (95 % confidence limits 43.57 – 50.05)	21.01 (95 % confidence limits 19.71 – 22.65)

Not statistically significantly different compared to the control for biomass (Williams-t-test, α = 0.05, one-sided smaller)
* statistically significantly different compared to control regarding reproduction (Williams-t-test, α = 0.05, one-sided smaller)
Negative values = increase, relative to control
[1] based on estimation of the data,
[2] 3-parametric normal cumulative distribution function (CDF), values in mg test item/kg soil dry weight were calculated by conversion of mg a.i./kg soil dry weight using test item density and the analysed content of a.i.

The validity criteria for the control group were met:

- Adult mortality: ≤ 10 % (being 0% after 4 weeks)
- Number of juveniles per replicate: ≥ 30 (being 199 to 251)
- Coefficient of variation of reproduction: ≤ 30 % (being 9.1 %)

Conclusion

In a 56-day earthworm reproduction study with GLOB1911F, no adverse effect on survival of the adult earthworms and no statistically significant effects on biomass of the earthworm Eisenia andrei in artificial soil were determined up to and including 95.95 mg test item/kg soil dry weight weight (analysed equivalent to 43.39 mg a.i./kg soil dry weight), i.e. the highest concentration tested.
The NOEC for mortality and change of biomass was determined to be 95.95 mg test item/kg soil dry weight (analysed equivalent to 43.39 mg a.i./kg soil dry weight). The NOEC for reproduction was determined to be 16.45 mg test item/kg soil dry weight (analysed equivalent to 7.44 mg a.i./kg soil dry weight). The EC10, EC20 and EC50 values for reproduction were calculated to be 17.64, 24.59 and 46.43 mg test item/kg soil dry weight (analysed equivalent to 7.98, 11.13 and 21.01 mg a.i./kg soil dry weight), respectively.

Comments of zRMS:	The study was evaluated and accepted (valid) for risk assessment at zonal level. No further action was taken. NOEC = 8.8 mg product/kg dw (2.1 mg a.s./kg dw) NOECcorr = 4.4 mg product/kg dw (1.05 mg a.s./kg dw)

This study was already submitted in support of the authorisation of product DIFCOR 250 EC and was positively evaluated.

Reference:	KCP 10.4.1.1/02
Report	Earthworm reproduction test with Difenoconazole 250 g/L EC (OECD 222, April 2004) Servajean E., 2009, report 09-99-048-ES.
Guideline(s):	Yes, OECD 222
Deviations:	No
GLP:	Yes
Acceptability:	YES

Executive summary

The purpose of this study was to determine the long-term effects of Difenoconazole 250 g/L EC on the reproductive performance of earthworms (*Eisenia fetida*) under laboratory conditions.

The test was performed according to the recommendations of the OECD Guideline 222 as adopted in April 2004.

Materials and methods

Test item:	Difenoconazole 250 g/L EC Batch No.80029604 (235.9 g difenoconazole/kg)
Test species:	*Eisenia fetida*
Test system:	Exposure of worms to different concentrations of the test item mixed into artificial soil substrate (with 10 % peat)
Reference item:	Carbendazim
Test conditions:	Temperature: 20.5-25 °C Light intensity: 400-800 lux Photoperiod: light : dark = 16 h : 8 h
Treatments:	Control (untreated), test item (Difenoconazole 250 g/L EC)
Test concentrations:	5.6, 8.8, 14.4, 23.2 and 36.8 mg test item/kg dry soil (eq. to 1.3, 2.1, 3.4, 5.5 and 8.7 mg difenoconazole/kg dry soil)
Exposure time:	28 days
Biological Assays:	Counting and weighing of surviving earth-worms after 28 days. At the end of the incubation time, counting of juvenile worms, recording of any behavioural or pathological abnormalities.

Dates of work: Experimental start date: 11 May 2009
Experimental completion date: 8 July 2009

Results and discussion

No changes in biomass were observed for Difenoconazole 250 g/L EC at any dose rate, in contrary to carbendazim.

Table A12: Findings for Toxicity to earthworms

Concentration	Mean % mortality at the end of exposure phase	Mean number of juveniles at the end of the test ± S.D.
Control	0.0 %	148.0 ± 24.4
Test item		
5.6 mg/kg	0.0 %	135.8 ± 28.0
8.8 mg/kg	0.0 %	126.0 ± 23.5
14.4 mg/kg	0.0 %	102.3 ± 16.0
23.2 mg/kg	2.5 %	95.3 ± 10.2
36.8 mg/kg	0.0 %	58.8 ± 15.2
Carbendazim		
1.0 mg/kg	0.0 %	95.3 ± 14.5
5.0 mg/kg	0.0 %	0.0 ± 0.0

The 56 day EC_{50} for difenoconazole 250 g/L EC was 27.1 mg/kg soil (eq. to 6.4 mg as/kg soil).
The NOEC for difenoconazole 250 g/L EC was 8.8 mg/kg soil (eq. to 2.1 mg as/kg soil).

No pathological symptom or behavioural changes were noted among the surviving worms.

Conclusion

Difenoconazole 250 g/L EC had no sublethal effects on earthworms when applied at up to 8.8 mg/kg soil or 2.1 mg as/kg.

A 2.4.1.2 KCP 10.4.1.2 Earthworms - field studies

Comments of zRMS:	The study was evaluated and accepted. The validity criteria were met: • earthworm abundance on arable land (average): ≥ 60/m² at test initiation (pre-sampling); • each of two dominant species representing different life forms (anecics, endogeics) present in a sufficiently high density of 10 to 15 individuals per m² or 10 % of total earthworm population; • significant reduction of the earthworm abundance and / or biomass by the reference item: at least 50 % Application of Difenoconazole 250 g/L EC tested at an application rate of 1.5 L/ha had no adverse effects on single species, ecological groups and total earthworm abundance and biomass about one year after test item application.

Reference:	KCP 10.4.1.2
Report	Effects of Difenoconazole 250 g/L EC on earthworms under field conditions Schulz L., 2015, report 14 10 48 007 F.
Guideline(s):	Yes, ISO 11268-3 (1999) Technical Recommendations to ISO 11268-3 (1999), KULA et al. (2006)
Deviations:	No
GLP:	Yes
Acceptability:	YES

Executive summary

The purpose of the study was to investigate possible effects on field populations of earthworms after application of the test item. Therefore, a field experiment lasting about one year was performed. The effects of the test item with regard to species composition, biomass and abundance were compared to a tap water treated control and to a reference item.

The test was performed following the guideline ISO 11268-3 (1999) "Soil quality - Effects of pollutants on earthworms, Part 3: Guidance of the determination of effects in field situations" and taking into account the recommendations of KULA, C. et al. (2006) "Technical Recommendations for the Update of the ISO Earthworm Field Test Guideline (ISO 11268-3)".

Materials and methods

Test item:	Difenoconazole 250 g/L EC Batch No.14000300 Active ingredient/content: difenoconazole 250 g/L (nominal), 253.4 g/L (analysed) Density (20 °C): 1.06 g/mL
Reference item:	Nutdazim 50 FLOW® (carbendazim 500 g/L, nominal)
Test Guidelines:	ISO Guideline 11268-3: Soil quality – Effects of pollutants on earthworms. Part 3: Guidance on the determination of effects in field situations (ANONYMOUS, 1999)
Test design:	3 treatments, 4 replicates, each 10 m x 10 m, were arranged in a randomised complete block design.
Treatments:	1 Control (tap water) 2 Difenoconazole 250 g/L EC 1.5 L/ha 4 Reference item 20 L/ha
Application volume:	600 L/ha
Number of applications:	1
Field site:	arable land
Cultivated crop:	The application was performed on bare soil. About 1 month after test item application, the test field was seeded with the fodder crop "Landsberger Gemenge" (clover grass mixture) which

	stayed on the field until the end of the study.
Application date:	11.04.2014
Equipment:	Calibrated plot sprayer (PL 1, agrotop GmbH, Obertraubling) with a spray width of 2.5 m and with 10 nozzles TEEJET DG 80015 VS.
Test conditions:	Natural field conditions, soil textural class: silty loamy sand (DIN 4220) / loam (USDA), mean pH (CaCl2) 5.7, mean total organic carbon content 1.07 % and mean maximum water holding capacity 33.2 g/100 g soil dry weight.
Surface monitoring:	Assessment of alive, moribund and dead earthworms on the soil surface in two monitoring areas of 1.0 m² per plot in all control and test item replicates from day 1 to day 3 after test item application.
Earthworm sampling:	Defined areas were sampled to assess earthworm populations before and three times after application. Earthworms were sampled from four 0.125 m² sampling areas per plot per sampling occasion.
Sampling method:	Hand sorting combined with formalin extraction in the excavated hole.
Sampling dates:	pre-sampling on 31.03.2014 (about 2 weeks before test item application) 1st sampling on 14.05.2014 (about 1 month after test item application) 2nd sampling on 29.10.2014 (about 6 months after test item application) 3rd sampling on 30.03.2015 (about 12 months after test item application)
Sampling processing:	Live earthworms were collected and placed in separate vessels containing water. Vessels with earthworms were stored cool and dark for approximately 48 hours until determination. Adult earthworms were identified to the species level and juveniles were identified to species level if possible, otherwise to the genus level.
Endpoints:	Total abundance, total biomass, total adult and total juvenile abundance and biomass, total adult and total juvenile abundance and biomass of endogeic and anecic, total adult and total juvenile abundance and biomass of single species
Statistics:	With the Shapiro-Wilk's-test data were analysed for normal distribution and with the Levene's test data were analysed for homogeneity in variance. Data were reasonably normal in distribution and variances were reasonably equal. Therefore data were analysed as follows: <u>Pre-treatment sampling:</u> Data were analysed with a two-factorial analysis of variance

(ANOVA) with treatment as fixed factor and block as random factor

Post-treatment sampling:

Data were analysed by a one-sided Dunnett-test with treatment group < control at the 5 % significance level. Test item and reference item were analysed in separate analyses.

Results and discussion

Earthworm species found in the plots of the field site at pre-sampling were the endogeic species *Allolobophora chlorotica* (13.0 % of total earthworms), *Aporrectodea caliginosa* (42.0 % of total earthworms) and *Aporrectodea rosea* (3.6 % of total earthworms) as well as the anecic species *Aporrectodea longa* (4.0 % of total earthworms) and *Lumbricus terrestris* (31.3 % of total earthworms).
The presence of the dominant species *Aporrectodea caliginosa* and *Lumbricus terrestris* representing different ecological groups indicated the suitability of the field site.

The toxic reference item reduced total earthworm abundance and biomass by 22.0 % and 50.3 % at 1st sampling, respectively. *Lumbricus terrestris* was the most sensitive species and was reduced in total abundance and biomass by 65.3 % and 66.6 % on this sampling date, respectively.
The statistically significant reduction of total earthworm biomass of 50.3 % at 1st sampling (about 1 month after test item application) confirmed the validity of the test system.

Surface monitoring on days 1 - 3 after test item application showed that there was no acute primary effect on earthworms by Difenoconazole 250 g/L EC. No alive, moribund or dead earthworms were found on the soil surface neither in the test item nor in the control monitoring areas.

No statistically significant reductions in total earthworm abundance and biomass could be observed for the tested application rate of 1.5 L Difenoconazole 250 g/L EC about 1, 6 and 12 months after test item application. Furthermore, no statistically significant reductions in abundance and biomass of the different earthworm species (*Allolobophora chlorotica*, *Aporrectodea caliginosa*, *Aporrectodea rosea*, *Aporrectodea longa* and *Lumbricus terrestris*) and ecological groups (endogeic and anecic earthworms) could be observed for the tested application rate of 1.5 L/ha about 1, 6 and 12 months after test item application.

All validity criteria were met.
The mean abundance of earthworms of the test field at trial start was 197.0 ind./m2, thus fulfilling the guideline recommendation (60 ind./m² for arable soils).
At least one representative of endogeic and anecic earthworms was present at the field site in a sufficient number (>10 % of total earthworms or 10 - 15 ind./m2), with abundances of 82.7 ind./m2 for Aporrectodea caliginosa (endogeic) and 61.5 ind./m² for Lumbricus terrestris (anecic; pre-sampling values).
In the reference item treatment group the total earthworm abundance and biomass was reduced by 22.0 % and 50.3 % at 1st sampling (about 1 month after test item application), respectively, fulfilling the guideline recommendation (reduction of the earthworm abundance and / or biomass of > 50 % compared to
the control).

Table A13: Mean abundance of the earthworm populations

		Abundance (ind./m²)			
	Treatment group	pre-sampling	1st sampling	2nd sampling	3rd sampling
Total	Control	200.5 ± 58.1 (100.0%)	93.0 ± 19.2 (100.0%)	304.0 ± 118.5 (100.0%)	269.5 ± 92.9 (100.0%)
	Difenoconazole 250 g/L EC (1.5 L/ha)	197.5 ± 38.7 (98.5%)	91.5 ± 39.5 (98.4%)	283.5 ± 62.5 (93.3%)	284.0 ± 114.4 (105.4%)
	Reference (20 L/ha)	193.0 ± 26.8 (96.3%)	72.5 ± 42.4 (78.0%)	303.5 ± 108.8 (99.8%)	215.0 ± 67.6 (79.8)
Total adults	Control	87.0 ± 10.4 (100.0%)	44.0 ± 9.4 (100.0%)	120.5 ± 18.0 (100.0%)	92.0 ± 17.7 (100.0%)
	Difenoconazole 250 g/L EC (1.5 L/ha)	98.5 ± 34.2 (113.2%)	42.0 ± 21.9 (95.5%)	113.0 ± 21.3 (93.8%)	102.5 ± 29.9 (111.4%)
	Reference (20 L/ha)	83.0 ± 15.5 (95.4%)	28.5 ± 16.8 (64.8%)	130.0 ± 21.10 (107.9%)	112.0 ± 20.2 (121.7%)
Total juveniles	Control	104.0 ± 47.2 (100.0%)	45.5 ± 16.8 (100.0%)	172.0 ± 91.3 (100.0%)	167.0 ± 75.6 (100.0%)
	Difenoconazole 250 g/L EC (1.5 L/ha)	92.5 ± 29.0 (88.9%)	45.5 ± 15.2 (100.0%)	161.5 ± 43.7 (93.9%)	175.0 ± 95.4 (104.8%)
	Reference (20 L/ha)	94.5 ± 20.6 (90.9%)	40.0 ± 24.7 (87.9%)	164.0 ± 91.1 (95.4%)	97.0 ± 47.1 (58.1%)

pre-sampling on 31.03.2014 (about 2 week before test item application)
1st sampling on 14.05.2014 (about 1 month after test item application)
2nd sampling on 29.10.2014 (about 6 months after test item application)
3rd sampling on 30.03.2015 (about 12 months after test item application)

Statistic: comparisons of test item treatments *vs.* control and reference *vs.* control: one-sided Dunnett-test
Bold values indicate statistically significant differences to control ($p \leq 0.05$).
± represent the standard deviation
in brackets: the percentages from control

Table A14: Mean abundance of the earthworm populations (continued)

		Abundance (ind./m²)			
	Treatment group	pre-sampling	1st sampling	2nd sampling	3rd sampling
A. caliginosa	Control	87.5 ± 37.9 (100.0%)	28.0 ± 17.0 (100.0%)	166.0 ± 89.1 (100.0%)	136.0 ± 54.4 (100.0%)
	Difenoconazole 250 g/L EC (1.5 L/ha)	79.0 ± 17.2 (90.3%)	31.0 ± 21.5 (110.7%)	141.0 ± 24.9 (84.9%)	121.0 ± 36.9 (89.0%)
	Reference (20 L/ha)	81.5 ± 22.7 (93.1%)	44.0 ± 31.5 (157.1%)	202.0 ± 66.1 (121.7%)	152.5 ± 42.3 (112.1%)
A. chlorotica	Control	30.5 ± 11.0 (100.0%)	23.5 ± 17.9 (100.0%)	44.0 ± 25.5 (100.0%)	41.5 ± 10.4 (100.0%)
	Difenoconazole 250 g/L EC (1.5 L/ha)	31.0 ± 23.4 (101.6%)	18.5 ± 11.5 (78.7%)	49.5 ± 30.7 (112.5%)	59.0 ± 39.0 (142.2%)
	Reference (20 L/ha)	15.5 ± 9.9 (50.8%)	7.0 ± 5.3 (29.8%)	37.0 ± 25.3 (84.1%)	**15.0 ± 12.1 (36.1%)**
A. rosea	Control	7.5 ± 3.8 (100.0%)	1.5 ± 3.0 (100.0%)	13.0 ± 7.8 (100.0%)	6.0 ± 1.6 (100.0%)
	Difenoconazole 250 g/L EC (1.5 L/ha)	6.5 ± 2.5 (80.0%)	2.5 ± 2.5 (166.7%)	16.5 ± 15.0 (126.9%)	10.5 ± 12.4 (175.0%)
	Reference (20 L/ha)	8.0 ± 4.3 (106.7%)	3.0 ± 1.2 (200.0%)	13.0 ± 9.3 (100.0%)	5.0 ± 4.2 (83.3%)
A. longa	Control	7.5 ± 5.7 (100.0%)	0.0 ± 0.0 (100.0%)	27.5 ± 21.8 (100.0%)	21.0 ± 21.8 (100.0%)
	Difenoconazole 250 g/L EC (1.5 L/ha)	9.0 ± 2.6 (120.0%)	1.5 ± 1.0 (0.0%)	26.5 ± 8.4 (96.4%)	30.0 ± 21.2 (142.9%)
	Reference (20 L/ha)	7.0 ± 3.5 (93.3%)	0.5 ± 1.0 (0.0%)	21.5 ± 5.7 (78.2%)	15.0 ± 12.9 (71.4%)
L. terrestris	Control	55.0 ± 17.9 (100.0%)	36.0 ± 9.4 (100.0%)	41.5 ±11.9 (100.0%)	54.0 ± 18.3 (100.0%)
	Difenoconazole 250 g/L EC (1.5 L/ha)	64.0 ± 13.6 (116.4%)	33.5 ± 6.0 (93.1%)	41.0 ± 8.3 (98.8%)	57.5 ± 21.1 (106.5%)
	Reference (20 L/ha)	65.5 ± 5.5 (119.1%)	**12.5 ± 5.3 (34.7%)**	**18.0 ± 10.5 (43.4%)**	20.0 ± 11.2 (37.0%)

pre-sampling on 31.03.2014 (about 2 week before test item application)
1st sampling on 14.05.2014 (about 1 month after test item application)
2nd sampling on 29.10.2014 (about 6 months after test item application)
3rd sampling on 30.03.2015 (about 12 months after test item application)

Statistic: comparisons of test item treatments *vs.* control and reference *vs.* control: one-sided Dunnett-test
Bold values indicate statistically significant differences to control ($p \leq 0.05$).
± represent the standard deviation
in brackets: the percentages from control
statistically not analysed (due to low abundances no statistical analyses were performed)

Table A15: Mean Biomass of the total earthworm populations

		Abundance (ind./m²)			
	Treatment group	pre-sampling	1st sampling	2nd sampling	3rd sampling
Total	Control	147.21 ± 22.7 (100.0%)	90.71 ± 8.3 (100.0%)	209.34 ± 68.0 (100.0%)	220.81 ± 55 5 (100.0%)
	Difenoconazole 250 g/L EC (1.5 L/ha)	179.17 ± 40.3 (121.7%)	82.55 ± 26.3 (91.0%)	206.09 ± 22.0 (98.5%)	225.21 ± 72.8 (102.0%)
	Reference (20 L/ha)	191.10 ± 33.8 (129.8%)	**45.05 ± 30.7 (49.7%)**	173.85 ± 40.3 (83.1%)	182.44 ± 56.6 (82.6%)
Total adults	Control	101.02 ± 13.9 (100.0%)	70.31 ± 12.0 (100.0%)	136.63 ± 34.5 (100.0%)	137.35 ± 33.9 (100.0%)
	Difenoconazole 250 g/L EC (1.5 L/ha)	131.95 ± 37.5 (130.6%)	61.56 ± 28.5 (87.6%)	143.27 ± 16.8 (104.9%)	162.89 ± 39.0 (118.6%)
	Reference (20 L/ha)	143.6 ± 42.4 (142.1%)	**29.28 ± 18.6 (41.6%)**	125.73 ± 21.1 (92.0%)	140.87 ± 37.2 (102.6%)
Total juveniles	Control	43.55 ± 21.4 (100.0%)	19.46 ± 4.6 (100.0%)	69.17 ± 44.8 (100.0%)	79.84 ± 40.5 (100.0%)
	Difenoconazole 250 g/L EC (1.5 L/ha)	45.68 ± 9.9 (104.9%)	20.49 ± 5.3 (105.3%)	59.09 ± 12.9 (85.4%)	59.89 ± 35.8 (75.0%)
	Reference (20 L/ha)	39.94 ± 8.1 (91.7%)	14.89 ± 12.0 (76.6%)	45.65 ± 20.7 (66.0%)	40.05 ± 19.2 (50.2%)

pre-sampling on 31.03.2014 (about 2 week before test item application)
1st sampling on 14.05.2014 (about 1 month after test item application)
2nd sampling on 29.10.2014 (about 6 months after test item application)
3rd sampling on 30.03.2015 (about 12 months after test item application)

Statistic: comparisons of test item treatments *vs.* control and reference *vs.* control: one-sided Dunnett-test
Bold values indicate statistically significant differences to control ($p \leq 0.05$).
± represent the standard deviation
in brackets: the percentages from control

Tot	Reference (20 L/ha)	94.5 ± 20.6 (90.9%)	40.0 ± 24.7 (87.9%)	164.0 ± 91.1 (95.4%)	97.0 ± 47.1 (58.1%)

pre-sampling on 31.03.2014 (about 2 week before test item application)
1st sampling on 14.05.2014 (about 1 month after test item application)
2nd sampling on 29.10.2014 (about 6 months after test item application)
3rd sampling on 30.03.2015 (about 12 months after test item application)

Statistic: comparisons of test item treatments *vs.* control and reference *vs.* control: one-sided Dunnett-test
Bold values indicate statistically significant differences to control ($p \leq 0.05$).
± represent the standard deviation
in brackets: the percentages from control

		Abundance (ind./m²)			
	Treatment group	pre-sampling	1st sampling	2nd sampling	3rd sampling
A. caliginosa	Control	48.75 ± 14.9 (100.0%)	11.63 ± 7.0 (100.0%)	81.73 ± 38.8 (100.0%)	61.33 ± 16.1 (100.0%)
	Difenoconazole 250 g/L EC (1.5 L/ha)	50.90 ± 15.1 (104.4%)	12.08 ± 8.6 (103.9%)	61.5 ± 7.5 (75.2%)	52.56 ± 8.2 (85.7%)
	Reference (20 L/ha)	41.0 ± 17.4 (84.1%)	18.25 ± 12.1 (156.9%)	100.37 ± 15.9 (122.8%)	89.74 ± 28.0 (146.3%)
A. chlorotica	Control	9.46 ± 3.7 (100.0%)	6.60 ± 5.6 (100.0%)	12.21 ± 7.0 (100.0%)	9.50 ± 2.0 (100.0%)
	Difenoconazole 250 g/L EC (1.5 L/ha)	10.16 ± 8.6 (107.5%)	4.95 ± 3.7 (75.0%)	12.65 ± 8.8 (103.7%)	11.89 ± 7.5 (125.2%)
	Reference (20 L/ha)	5.40 ± 3.5 (57.1%)	1.79 ± 1.5 (27.3%)	11.43 ± 7.4 (93.7%)	**4.11 ± 3.93 (43.2%)**
A. rosea	Control	0.95 ± 0.3 (100.0%)	0.13 ± 0.3 (100.0%)	2.35 ± 1.1 (100.0%)	1.02 ± 0.2 (100.0%)
	Difenoconazole 250 g/L EC (1.5 L/ha)	0.85 ± 0.5 (89.5%)	0.28 ± 0.5 (214.2%)	2.68 ± 2.5 (114.1%)	1.66 ± 1.9 (162.8%)
	Reference (20 L/ha)	1.73 ± 0.6 (181.8%)	0.33 ± 0.2 (250.0%)	2.22 ± 1.5 (94.5%)	1.35 ± 1.0 (132.9%)
A. longa	Control	11.20 ± 8.3 (100.0%)	0.00 ± 0.0 (100.0%)	29.71 ± 25.1 (100.0%)	21.59 ± 23.2 (100.0%)
	Difenoconazole 250 g/L EC (1.5 L/ha)	16.01 ± 2.9 (142.9%)	1.72 ± 1.6 (0.0%)	26.76 ± 11.1 (90.1%)	28.58 ± 19.5 (132.4%)
	Reference (20 L/ha)	5.77 ± 2.3 (51.5%)	0.10 ± 0.2 (0.0%)	33.99 ± 9.8 (114.4%)	29.65 ± 31.1 (137.3%)
L. terrestris	Control	73.25 ± 12.3 (100.0%)	71.75 ± 5.2 (100.0%)	80.62 ± 29.5 (100.0%)	124.74 ± 21.8 (100.0%)
	Difenoconazole 250 g/L EC (1.5 L/ha)	99.36 ± 33.1 (135.6%)	62.95 ± 16.9 (87.7%)	100.64 ± 7.37 (124.8%)	128.60 ± 43.6 (103.1%)
	Reference (20 L/ha)	131.66 ± 32.2 (179.7%)	**23.94 ± 17.8 (33.4%)**	**23.07 ± 17.7 (28.6%)**	**55.91 ± 30.6 (44.8%)**

pre-sampling on 31.03.2014 (about 2 week before test item application)
1st sampling on 14.05.2014 (about 1 month after test item application)
2nd sampling on 29.10.2014 (about 6 months after test item application)
3rd sampling on 30.03.2015 (about 12 months after test item application)

Statistic: comparisons of test item treatments *vs.* control and reference *vs.* control: one-sided Dunnett-test
Bold values indicate statistically significant differences to control ($p \leq 0.05$).
± represent the standard deviation
in brackets: the percentages from control
statistically not analysed (due to low abundances no statistical analyses were performed)

Conclusion

The current study meets all criteria required for a valid earthworm field study as requested by the available guidance for earthworm field studies (ISO 11268-3, 1999; KULA et al., 2006). It can be concluded that the application of Difenoconazole 250 g/L EC tested at an application rate of 1.5 L/ha had no adverse effects on single species, ecological groups and total earthworm abundance and biomass about one year after test item application.

A 2.4.2 KCP 10.4.2 Effects on non-target soil meso- and macrofauna (other than earthworms)

Comments of zRMS:	The study was evaluated and accepted. The validity criteria were met: The following endpoint was derived: $LC_{50} \geq$ 1000 mg product/kg soil dw. NOEC for mortality ≥.1000 mg product/kg soil dw; NOEC for reproduction = 625 mg product/kg soil dw; $ER_{20.\,50}$ > 1000 mg product/kg soil dw;

Reference:	KCP 10.4.2-01
Report	Effects of GLOB1911F on the reproduction of the predatory mite *Hypoaspis aculeifer*, Schulz L., 2020a, report 20 48 THC 0009.
Guideline(s):	Yes, OECD 226 (2016)
Deviations:	No
GLP:	Yes
Acceptability:	YES

Executive summary

The purpose of this study was to determine potential effects of the test item on mortality and reproductive output of the soil mite species *Hypoaspis aculeifer* (CANESTRINI) as a representative species of soil micro-arthropods during a test period of 14 days.

The test was performed according to the OECD Guideline 226 (2016).

Materials and methods

Test item:	GLOB1911F , Batch No.: BRN3030 Content of a.i.: difenoconazole 500 g/L (nominal), 521.5 g/L (analysed)
Test species:	Hypoaspis aculeifer (CANESTRINI) age: adult female mites with an age difference of 2 days source: Katz Biotech AG, Baruth
Test system:	Exposure of female mites to different concentrations of the test item mixed into artificial soil substrate
Test design:	The effects of the test item on mortality and reproduction of the soil mite species Hypoaspis aculeifer (CANESTRINI) were investigated in a chronic laboratory experiment over a time period of 14 days according to OECD 226. Each of the eight different test item concentrations were homogeneously mixed into artificial soil and filled into glass vessels. Subsequently, the

	soil mites were introduced on top of the soil and the vessels were covered. Four replicates were performed for the test item groups and eight replicates for the control group; each replicate consisted of ten female soil mites. The mites were fed with Tyrophagus putrescentiae (SCHRANK) at the beginning and every two to three days during the whole test period. For the main measured variables, the number of juveniles per test vessel and additionally the mortality of the adult female mites were determined. Mortality and reproductive output of the mites exposed to the test item were compared to that of the control in order to determine the no observed effect concentration (NOEC). Assessment of adult mortality and reproduction effects was carried out after 14 days.
Endpoints:	Mortality of adults and number of juveniles
Reference item:	Dimethoate (98.8 % ± 0.5 %, analysed). Test concentrations: 1.4, 2.1, 3.1, 4.7, 7.0, 10.5 mg a.s./kg soil dry weight (d.w.), equivalent to 1.4, 2.1, 3.1, 4.7, 7.1, 10.6 mg reference item/kg soil d.w. (based on analysed purity, spacing factor 1.5) The effects of the reference item were investigated in a separate study.
Test conditions:	Artificial soil according to OECD 226, pH 6.3 - 6.4 at test start, pH 6.1 at test end; water content at test start 48.23 - 49.62 % of maximum water holding capacity (WHC) and 46.78 - 48.30 % of maximum WHC at test end; temperature 20.0 - 21.2 °C; photoperiod: 16 h light : 8 h dark; light intensity: 530 lux.
Treatments:	Control (untreated), test item (GLOB1911F)
Test concentrations:	37, 60, 95, 153, 244, 391, 625, 1000 mg test item/kg soil dry weight (spacing factor: 1.6)
Dates of work:	Experimental start date: 25.03.2020 Experimental completion date: 16.04.2020
Statistics:	Mortality Multiple Sequentially-rejective Fisher Test after Bonferroni-Holm (α = 0.05, one-sided greater) Reproduction Williams Multiple Sequential t-test Procedure (α = 0.05, one-sided smaller) Statistical program: ToxRat Professional 3.2.1 (RATTE 2015)

Results and discussions

Mortality rates of 0.0 - 5.0 % were recorded in the test item treatment groups. In the control group, the mortality rate was 2.5 %.
The observed mortality rates in the test item treatment groups compared to control were not statistically

significant (Multiple Sequentially-rejective Fisher Test after Bonferroni-Holm, α = 0.05, one-sided greater). Differences in the behaviour and the morphology of the mites between the control and the test item treatment groups could not be observed.

Fourteen days after introduction of the parental mites into the test vessels, the mean number of juveniles was 226.0, 230.3, 242.5, 227.8, 224.8, 227.0, 231.0 and 214.5 at concentrations of 37, 60, 95, 153, 244, 391, 625 and 1000 mg test item/kg soil d.w., respectively. The mean reproduction in the control reached 248.1 juveniles. The test item showed no statistically significantly adverse effects on reproduction up to an including 625 mg test item/kg soil d.w.. However, the test item caused statistically significant effects on reproduction at 1000 mg test item/kg soil d.w. (Williams Multiple Sequential t-test Procedure, α = 0.05, one-sided smaller).

Results are summarised in table below.

Table A17: Effects of the test item on *Hypoaspis aculeifer* mortality and reproduction (day 14)

Endpoint	Treatment group [mg test item/kg soil dry weight]								
	Control	37	60	95	153	244	391	625	1000
Mean adult mortality [%] (day 14)	2.5	0.0	0.0	0.0	2.5	5.0	0.0	5.0	0.0
Mean number of juveniles (day 14)	248.1	226.0	230.3	242.5	227.8	224.8	227.0	231.0	214.5 *
Coefficient of variation [%]	10.9	6.0	2.7	8.3	5.1	8.7	9.1	3.0	9.6
Reproduction in [%] of control	100	91	93	98	92	91	91	93	86
	Endpoint [mg test item/kg soil dry weight]								
NOEC (mortality)	≥ 1000								
NOEC (reproduction)	625.0								
LC_{50} (mortality) [1]	≥ 1000								
EC_{10} (reproduction)	n.d.								
EC_{20} (reproduction) [1]	> 1000								
EC_{50} (reproduction) [1]	> 1000								

Not statistically significantly different compared to the control (Multiple Sequentially-rejective Fisher Test after Bonferroni-Holm for mortality, α = 0.05, one-sided greater and Dunnett-t-test for reproduction, α = 0.05, one-sided smaller)
* statistically significantly different compared to the control (Williams Multiple Sequential t-test Procedure, α = 0.05, one-sided smaller)
[1] based on estimation of the data
n.d. no reliable EC_{10} value could be calculated

In a separate study (BioChem project No. 19 48 THC 0036, experimental start date: 23.09.2019, reported 28.10.2019), the EC50 (reproduction) of the reference item dimethoate (98.8 % ± 0.5 %, analysed) was calculated to be 6.3 mg a.s./kg soil d.w. The results of the reference test demonstrate the sensitivity of the test system.

The validity criteria for the control group were met:

- Mean mortality of adult females: ≤ 20 % (observed: 2.5 %)
- Mean number of juveniles per replicate: ≥ 50 (observed: 248.1)
- Coefficient of variation (mean number of juveniles per replicate): ≤ 30 % (observed: 10.9 %)

Conclusion

In a 14-day *Hypoaspis aculeifer* reproduction study with GLOB1911F, the LC_{50} for mortality could not be calculated, but it can be concluded, that this value is equal or higher than 1000 mg test item/kg soil dry weight.
The NOEC for mortality and reproduction was determined to be equal or higher than 1000 and 625.0 mg test item/kg soil d.w., respectively.

Comments of zRMS:	The reproduction study was accepted. The validity criteria were met: • mortality in the control group: ≤ 20 % (observed: 2.5 %); • mean number of juveniles per test vessel: ≥ 100 (observed: average of 1140/vessel); • coefficient of variation for the mean number of juveniles: < 30 % (observed: 13.8 %). The following endpoint was derived: LC_{50} for mortality > 215.19 mg prod/kg dw; NOEC for mortality and reproduction was 215.19 mg prod/kg dw $ER_{10, 20\ 50}$ > 215.19 mg prod/kg dw.

Reference:	KCP 10.4.2-02
Report	Effects of GLOB1911F on the reproduction of the collembolan *Folsomia candida*, Fiedrich S., 2020b, report 20 48 TCC 0011.
Guideline(s):	Yes, OECD 232 (2016)
Deviations:	No
GLP:	Yes
Acceptability:	YES

Executive summary

The purpose of this study was to determine potential effects of the test item on the reproductive output of the collembolan Folsomia candida as a representative of soil micro-arthropods during a test period of 28 days. After 4 weeks, the number of offspring (juveniles) and surviving parental collembolans were counted. The test was performed according to the OECD Guideline 232 (2016).

Materials and methods

Test item:	GLOB1911F , Batch No.: BRN3030 Content of a.i.: difenoconazole 500 g/L (nominal), 521.5 g/L (analysed)
Test species:	Collembolan (*Folsomia candida*), age: 9 - 12 days; source: in-house culture.
Test design:	Effects on Folsomia candida: 28 days; 8 test item treatment groups and an untreated control group, 8 replicates in the control group and 4 replicates in the test item treatment groups, each containing 10 collembolans; assessments of adult mortality

	and reproduction 28 days after application
Endpoints:	Mortality and reproduction after 28 days
Test system:	Exposure of collembolans to different concentrations of the test item mixed into the substrate (artificial soil with 5 % peat)
Reference item:	Boric acid The effects of the reference item were investigated in a separate study.
Test conditions:	Temperature: 19.7 - 21.8 °C Light intensity: 590 lux Photoperiod: light : dark = 16 h : 8 h
Treatments:	Control (untreated), test item (GLOB1911F)
Test concentrations:	3.51, 6.33, 11.39, 20.50, 36.90, 66.42, 119.55, 215.19 mg test item/kg soil dry weight (spacing factor: 1.8)
Dates of work:	Experimental start date: 28 February 2020 Experimental completion date: 27 March 2020
Statistics:	Multiple Sequentially-rejective Fisher Test after Bonferroni-Holm, Williams-t-test ($\alpha = 0.05$, one-sided), Statistical program: ToxRat Professional 3.2.1 (2015)

Results and discussions

Mortality rates of 0.0 % - 2.5 % were recorded in the test item treatment groups. 2.5 % parental mortality was observed in the control. No statistically significant effect (Multiple Sequentially-rejective Fisher Test after Bonferroni-Holm, $\alpha = 0.05$, one-sided greater) on parental mortality was found for any concentration tested. No effects on behaviour of the collembolans were observed during the test.

The mean number of juvenile collembolans counted four weeks after introduction of the parental collembolans into the test vessels was 1140 in the control and 1123, 1137, 1125, 1097, 1110, 1115, 1097 and 1162 at concentrations of 3.51, 6.33, 11.39, 20.50, 36.90, 66.42, 119.55 and 215.19 mg test item/kg soil d.w., respectively. No statistically significant effects (Williams-t-test, $\alpha = 0.05$, one-sided smaller) on the number of juveniles compared to the control group were found at any concentration tested.

The NOEC for mortality of the parental collembolans was determined to be 215.19 mg test item/kg soil dry weight. The LC50 could not be calculated, but it can be concluded that the LC50 is higher than 215.19 mg test item/kg soil d.w., the highest concentration tested.
The NOEC for reproduction was determined to be 215.19 mg test item/kg soil dry weight. The EC10, EC20 and EC50 values for reproduction could not be calculated, but it can be concluded that these values are higher than 215.19 mg test item/kg soil d.w., the highest concentration tested.

Results are summarised in table below.

Table A18: Chronic effects of GLOB1911F on *Folsomia candida* in a 28-day reproduction study

Endpoint	Treatment group [mg test item/kg soil dry weight]								
	Control	3.51	6.33	11.39	20.50	36.90	66.42	119.55	215.19
Mean adult mortality [%]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	0.0
Mean number of juveniles	1140	1123	1137	1125	1097	1110	1115	1097	1162
Reduction of reproduction [%] compared to control	-	1.6	0.3	1.3	3.8	2.7	2.2	3.8	-1.9
	Endpoints [mg test item/kg soil dry weight]								
NOEC (mortality)	215.19								
NOEC (reproduction)	215.19								
LC_{50} (mortality) [1]	> 215.19								
EC_{10} (reproduction) [1]	> 215.19								
EC_{20} (reproduction) [1]	> 215.19								
EC_{50} (reproduction) [1]	> 215.19								

Not statistically significantly different to control regarding mortality (Multiple Sequentially-rejective Fisher Test after Bonferroni-Holm, α = 0.05, one-sided greater) and reproduction (Williams-t-test, α = 0.05, one-sided smaller)
Calculations were done using unrounded values
Negative values = increase, relative to control
[1] based on estimation of the data

In a separate study (BioChem project No. 19 48 TCC 0057, dated 19 August 2019), the EC50 (reproduction) of the reference item boric acid was calculated to be 103 mg/kg soil dry weight. The results of the reference test demonstrate the sensitivity of the test system

The validity criteria for the control group were met:

- Mean adult mortality: ≤ 20 % (observed: 2.5 %)
- Mean number of juveniles per test vessel: ≥ 100 (observed: average of 1140/vessel)
- Coefficient of variation for the mean number of juveniles: < 30 % (observed: 13.8 %)

Conclusion

In a 28-day Folsomia candida reproduction study with GLOB1911F, the NOEC for mortality of the parental collembolans was determined to be 215.19 mg test item/kg soil dry weight. The LC50 could not be calculated, but it can be concluded that the LC50 is higher than 215.19 mg test item/kg soil d.w., the highest concentration tested.
The NOEC for reproduction was determined to be 215.19 mg test item/kg soil dry weight. The EC10, EC20 and EC50 values for reproduction could not be calculated, but it can be concluded that these values are higher than 215.19 mg test item/kg soil d.w., the highest concentration tested.

A 2.4.2.1 KCP 10.4.2.1 Species level testing

A 2.4.2.2 KCP 10.4.2.2 Higher tier testing

A 2.5 KCP 10.5 Effects on soil nitrogen transformation

Comments of zRMS:	The submitted study was accepted. The validity criteria were met. No adverse effects on soil nitrogen transformation (measured as NO_3-N-production) and on soil carbon transformation (measured as O_2-consumption) at the end of the 28-day incubation period were observed. The effect less than 25% was observed at 7.365mg GLOB1911F /kg dw soil.

Reference:	KCP 10.5
Report	Effects of GLOB1911F on the activity of soil microflora (Nitrogen transformation test), Schulz L., 2020b, report 20 48 SMN 0005.
Guideline(s):	Yes, OECD 216 (2000)
Deviations:	No
GLP:	Yes
Acceptability:	YES

Executive summary

The purpose of this study was to determine the effects of the test item on the activity of soil microflora with regard to nitrogen transformation (mineralization) in a laboratory test over a period of 28 days of exposure. The test was performed in accordance with the OECD Guideline 216 (2000) by measuring the nitrogen turnover.

Materials and methods

Test item:	GLOB1911F , Batch No.: BRN3030 Content of a.i.: Difenoconazole 500 g/L (nominal), 521.5 g/L (analysed)
Test soil:	Biologically active agricultural soil: loamy sand (DIN 4220) / sandy loam (USDA), pH 6.1, 1.45 % Corg, WHC: 37.74 g/100 g dry soil.
Test design:	The test was performed in accordance with the OECD Guideline 216 (2000). Aim of the study was the determination of the nitrogen transformation (NO3-nitrogen-production) in soil enriched with lucerne meal (concentration in soil 0.5 %) by comparison of nitrogen transformation in test item treated soil with a non-treated soil. Three replicates per treatment and concentration. NH4-nitrogen, NO3- and NO2-nitrogen were determined by using the Autoanalyzer (BRAN+LUEBBE). Sampling scheme: 0, 7, 14 and 28 days after treatment.
Test concentrations:	Control, 0.7365 mg test item/kg soil dry weight and 7.365 mg test item/kg soil dry weight. Test concentrations related to a soil depth of 5 cm and a soil density of 1.5 g/cm3.
Endpoints:	Effects on NO3-nitrogen-production after 28 days of exposure.

Reference item:	Dinoterb (purity: 99.28 % (g/g) analysed). The reference item was tested in a separate study (19 48 SMO 0001) at concentrations of 6.80, 13.60 and 27.20 mg/kg soil dry weight.
Test conditions:	Water content: approx. 45 % of its maximum water holding capacity; water content: 16.47 – 16.95 g/100 g dry soil; pH: 6.0 Soil samples were incubated at 18.9 – 20.8 °C, while stored in test vessels in the dark.
Statistics:	Calculation of mean values per treatment, standard deviations, coefficients of variation.
Dates of work:	Experimental start: 02.12.2019 Experimental end: 30.12.2019

Results and discussion

No adverse effects of the test item on nitrogen transformation in soil could be observed at both test concentrations (0.7365 mg/kg soil dry weight and 7.365 mg/kg soil dry weight) after 28 days (time interval 14-28). The results are summarised in the table below. As no significant effects were seen at 28 days, the test was terminated at this time.

Results are summarised in table below.

Table A19: Effects on nitrogen transformation in soil after treatment with the test item

Time Interval (days)	Control	0.7365 mg GLOB1911F/ kg soil dry weight		7.365 mg GLOB1911F/ kg soil dry weight	
	NO_3-N/day [mg/kg soil d.w.]	NO_3-N/day [mg/kg soil d.w.]	% difference to control [1)]	NO_3-N/day [mg/kg soil d.w.]	% difference to control [1)]
0-7	3.92	3.68	-6.2	3.89	-0.9
7-14	1.63	1.68	+2.9	1.95	+19.9
14-28	1.21	1.34	+10.4	1.35	+12.0

The calculations were performed with unrounded values
1) based on NO_3-N-production; - = inhibition; + = stimulation

The validity criteria were met:

In a separate study the reference item Dinoterb caused stimulations of nitrogen transformation of +62.7 % and +120.9 % at 13.60 and 27.20 mg Dinoterb per kg soil dry weight, respectively, determined 28 days after application (time interval 14-28).

The coefficients of variation in the control group of the nitrogen test were maximum 8.5 % and thus fulfilled the demanded range ≤ 15 %.

Conclusion

The test item GLOB1911F (tested at 0.7365 mg/kg soil dry weight and 7.365 mg/kg soil dry weight) caused no adverse effects (deviation from control <25 %, OECD 216) on soil nitrogen transformation (measured as NO3-N-production) at the end of the 28-day incubation period.

A 2.6 KCP 10.6 Effects on terrestrial non-target higher plants

A 2.6.1 KCP 10.6.1 Summary of screening data

A 2.6.2 KCP 10.6.2 Testing on non-target plants

Comments of zRMS:	The study is considered acceptable; all validity criteria were fulfilled. No effect on plant survival could be detected after application of GLOB1911F at rates of 0.063, 0.125, 0.250, 0.500, 1.000 L/ha to tested plant species at BBCH stage 12-14. The NOER for plant survival and biomass is higher or equal than the highest tested application rate of 1.000 L GLOB1911F/ha for all tested plant species. The study results were added at the end of summary.

Reference:	KCP 10.6.2-01
Report	Effect of GLOB1911F on seedling emergence and seedling growth of six non-target terrestrial plant species under greenhouse conditions, Kästner K. 2020a, Report No. 20 46 PSE 0002.
Guideline(s):	Yes, OECD 208 (2006)
Deviations:	No
GLP:	Yes
Acceptability:	YES

Executive summary

The purpose of the study was to determine potential effects of the test item GLOB1911F on seedling emergence and early growth of higher terrestrial plants after pre emergence application under controlled environmental conditions. Endpoints used to characterise the adverse effects of the test item were seedling emergence, survival of emerged seedlings, biomass (shoot fresh weight) and visible detrimental effects (e.g. chlorosis, necrosis, deformation, stunting). Statistical analysis was performed to determine the significance of the obtained results compared to the control. The test was performed following the recommendations of the OECD Guideline 208 (2006).

Materials and methods

Test item:	GLOB1911F , Batch No.: BRN3030 Content of a.i.: Difenoconazole 500 g/L (nominal), 521.5 g/L (analysed)
Test species:	wheat (*Triticum aestivum*), onion (*Allium cepa*), lettuce (*Lactuca sativa*), carrot (*Daucus carota*), white mustard (*Sinapis alba*), tomato (*Lycopersicon esculentum*)
Test design:	The seedling emergence and seedling growth test was conducted in the greenhouse in Gerichshain, Kupferstraße 6, Germany. The test was

	performed in January and February 2020 from application until 21 days after 50 % seedling emergence in the control groups. Effects on non-target plants: 21 days; 5 test item treatment groups and an untreated control group, 4-5 replicates of each treatment for each species.
Endpoints:	Endpoints observed 21 DAE were seedling emergence, survival (mortality) of emerged seedlings, biomass (shoot fresh weight) and visible phytotoxicity.
Test conditions:	Temperature: 18.2-22.0 °C Light intensity: 250.7-409.4 µmol/m^2/s Photoperiod: light : dark = 16 h : 8 h Relative humidity: 54.8-64.4%
Treatments:	Control (untreated water only), test item (GLOB1911F)
Test concentrations:	0.063, 0.125, 0.250, 0.500, 1.000 L test item/ha (spacing factor 2) in 200 L water/ha
Statistics:	Statistical analysis of data was performed using the software ToxRat Professional (ToxRatPro Version 3.3.0).
Dates of work:	08.01.2020 – 07.02.2020

Results and discussions

The effects of GLOB1911F after pre-emergence application on different plant species were examined at nominal application rates of 0.063, 0.125, 0.250, 0.500, 1.000 L test item/ha in 200 L water/ha under greenhouse conditions. The following results of test endpoints were seedling emergence, plant survival (mortality), shoot fresh weight and visual phytotoxicity on day 21 after 50 % emergence in the control.

Seedling emergence and plant survival
No effect on seedling emergence and plant survival could be detected after pre-emergence application of GLOB1911F to tested plant species

Table A20: Effects of GLOB1911F on seedling emergence and plant survival 21 DAE in seedling emergence and growth test

Test species	Application rates of GLOB1911F [L test item/ha in 200 L/ha water]	Number of living plants			Number of emerged plants	Emergence	Survival
		7 DAE	14 DAE	21 DAE	0-21 DAE	[%] compared to control	[%]
Wheat	0.000	30	30	30	30	100	100
	0.063	32	32	32	32	106.7	100
	0.125	30	30	30	30	100	100
	0.250	31	31	31	31	103.3	100
	0.500	32	32	32	32	106.7	100
	1.000	32	32	32	32	106.7	100
Onion	0.000	26	26	26	26	100	100
	0.063	26	26	26	26	100	100
	0.125	28	28	28	28	107.7	100
	0.250	27	27	27	27	103.8	100
	0.500	27	27	27	27	103.8	100
	1.000	25	25	25	25	96.2	100
Lettuce	0.000	26	26	26	26	100	100
	0.063	25	25	25	25	96.2	100
	0.125	26	26	26	26	100	100
	0.250	29	29	29	29	111.5	100
	0.500	29	29	29	29	111.5	100
	1.000	29	29	29	29	111.5	100
Carrot	0.000	27	27	27	27	100	100
	0.063	26	26	26	26	96.3	100
	0.125	26	26	26	26	96.3	100
	0.250	27	28	28	28	103.7	100
	0.500	26	26	26	26	96.3	100
	1.000	28	28	28	28	103.7	100

DAE days after 50 % emergence in the control group
No significant difference between control and treatment

Table A21: Effects of GLOB1911F on seedling emergence and plant survival 21 DAE in seedling emergence and growth test (continued)

Test species	Application rates of GLOB1911F [L test item/ha in 200 L/ha water]	Number of living plants			Number of emerged plants	Emergence	Survival
		7 DAE	14 DAE	21 DAE	0-21 DAE	[%] compared to control	[%]
White mustard	0.000	30	30	30	30	100	100
	0.063	29	29	29	29	96.7	100
	0.125	30	30	30	30	100	100
	0.250	30	30	30	30	100	100
	0.500	30	30	30	30	100	100
	1.000	30	30	30	30	100	100
Tomato	0.000	29	29	29	29	100	100
	0.063	27	27	27	27	93.1	100
	0.125	29	29	29	29	100	100
	0.250	28	28	28	28	96.6	100
	0.500	27	27	27	27	93.1	100
	1.000	28	28	28	28	96.6	100

DAE days after 50 % emergence in the control group
No significant difference between control and treatment

Phytotoxicity

The pre-emergence application at rates of 0.063, 0.125, 0.250, 0.500, 1.000 L GLOB1911F/ha caused no visible phytotoxic effects on tested plant species.

Shoot fresh weight

No significant biomass reduction could be detected on tested plant species after pre-emergence application at rates of 0.063, 0.125, 0.250, 0.500, 1.000 L GLOB1911F/ha.

Table A22: Effects of GLOB1911F on shoot fresh weight 21 DAE in seedling emergence and growth test [mean of all replicates in g]

Test Species	Application rates of GLOB1911F [L test item/ha in 200 L/ha water]					
	0.000	**0.063**	**0.125**	**0.250**	**0.500**	**1.000**
Wheat						
Mean [g]	52.7	56.3	54.2	52.4	54.7	57.5
SD	5.8	3.6	5.9	4.9	1.9	2.2
CV [%]	10.9	6.3	10.8	9.3	3.5	3.8
Inhibition [%]	--	-6.8	-2.8	0.4	-3.9	-9.2
Compared to control [%]	100.0	106.8	102.8	99.6	103.9	109.2
Onion						
Mean [g]	3.9	3.3	4.1	3.9	3.8	3.7
SD	1.6	0.3	0.4	1.3	0.4	0.8
CV [%]	39.8	8.5	10.3	34.0	11.9	20.9
Reduction [%]	--	14.9	-4.2	0.4	3.8	4.4
Compared to control [%]	100.0	85.1	104.2	99.6	96.2	95.6

DAE days after 50 % emergence in the control group SD Standard deviation CV coefficient of variation
No significant difference between control and treatment

Table A23: Effects of GLOB1911F on seedling emergence and plant survival 21 DAE in seedling emergence and growth test (continued)

Test Species	Application rates of GLOB1911F [L test item/ha in 200 L/ha water]					
	0.000	0.063	0.125	0.250	0.500	1.000
Lettuce						
Mean [g]	90.3	85.0	95.5	104.5	103.5	103.3
SD	1.3	11.5	12.3	6.2	6.3	4.7
CV [%]	1.4	13.5	12.9	5.9	6.1	4.6
Reduction [%]	--	5.8	-5.8	-15.7	-14.6	-14.3
Compared to control [%]	100.0	94.2	105.8	115.7	114.6	114.3
Carrot						
Mean [g]	10.9	10.8	10.9	11.4	11.4	13.5
SD	1.4	1.3	2.3	3.3	2.6	1.3
CV [%]	12.6	12.3	20.8	28.7	23.0	9.3
Reduction [%]	--	0.7	0.1	-4.7	-4.7	-23.7
Compared to control [%]	100.0	99.3	99.9	104.7	104.7	123.7
White mustard						
Mean [g]	155.6	153.5	157.1	154.5	154.1	146.9
SD	6.9	4.4	6.4	5.3	6.1	7.3
CV [%]	4.4	2.9	4.1	3.4	4.0	5.0
Reduction [%]	--	1.4	-0.9	0.7	1.0	5.6
Compared to control [%]	100.0	98.6	100.9	99.3	99.0	94.4
Tomato						
Mean [g]	93.6	89.8	91.4	91.2	94.2	90.8
SD	4.9	4.4	3.2	5.5	8.4	4.8
CV [%]	5.3	4.9	3.5	6.0	8.9	5.3
Reduction [%]	--	4.0	2.4	2.6	-0.6	3.1
Compared to control [%]	100.0	96.0	97.6	97.4	100.6	96.9

DAE days after 50 % emergence in the control group SD Standard deviation CV coefficient of variation
No significant difference between control and treatment

The NOER for seedling emergence, survival of emerged plants, phytotoxicity and biomass is higher or equal than the highest tested application rate of 1.000 L GLOB1911F/ha for all tested plant species.

All validity criteria were met:
- Seedling emergence in the control: ≥ 70 % (actual 84 - 100 %)
- Mean survival of emerged control seedlings: ≥ 90 % (actual 100 %)
- No visible phytotoxic effects were seen in the control and the plants exhibit only normal variation in growth and morphology for the test species
- Environmental conditions were identical and growing media contain the same amount of soil from the same source.

The study results are presented in the tables on following pages.

Appendix 1/ 1: Assessment data of wheat

Table 13: BBCH stage of wheat in seedling emergence and growth test with GLOB1911F (mean of all replicates)

GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
7 DAE	12	12	12	12	12	12
14 DAE	21-22	21-22	21-22	21-22	21-22	21-22
21 DAE	24-25	24-25	24-25	24-25	24-25	24-25

DEA days after 50 % emergence in the control group

Table 14: Number of living plants in wheat in seedling emergence and growth test with GLOB1911F

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
7 DAE	Rep. 1	8	8	8	8	8	8
	Rep. 2	7	8	7	8	8	8
	Rep. 3	8	8	7	8	8	8
	Rep. 4	7	8	8	7	8	8
	Mean	7.5	8.0	7.5	7.8	8.0	8.0
	SD	0.6	0.0	0.6	0.5	0.0	0.0
14 DAE	Rep. 1	8	8	8	8	8	8
	Rep. 2	7	8	7	8	8	8
	Rep. 3	8	8	7	8	8	8
	Rep. 4	7	8	8	7	8	8
	Mean	7.5	8.0	7.5	7.8	8.0	8.0
	SD	0.6	0.0	0.6	0.5	0.0	0.0
21 DAE	Rep. 1	8	8	8	8	8	8
	Rep. 2	7	8	7	8	8	8
	Rep. 3	8	8	7	8	8	8
	Rep. 4	7	8	8	7	8	8
	Mean	7.5	8.0	7.5	7.8	8.0	8.0
	SD	0.6	0.0	0.6	0.5	0.0	0.0
	CV [%]	7.7	0.0	7.7	6.5	0.0	0.0
	Inhibition [%]	--	-6.7	0.0	-3.3	-6.7	-6.7
	Compared to control [%]	100.0	106.7	100.0	103.3	106.7	106.7

DAE days after 50 % emergence in the control group SD Standard deviation CV coefficient of variation
Rep. Replicate
8 seeds were sown for each replicate
No significant difference between control and treatment

Table 15: Number of emerged plants in wheat in seedling emergence and growth test with GLOB1911F 0-21 DAE

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
0-21 DAE	Rep. 1	8	8	8	8	8	8
	Rep. 2	7	8	7	8	8	8
	Rep. 3	8	8	7	8	8	8
	Rep. 4	7	8	8	7	8	8
	Mean	7.5	8.0	7.5	7.8	8.0	8.0
	SD	0.6	0.0	0.6	0.5	0.0	0.0
	CV [%]	7.7	0.0	7.7	6.5	0.0	0.0
	Inhibition [%]	--	-6.7	0.0	-3.3	-6.7	-6.7
	Compared to control [%]	100.0	106.7	100.0	103.3	106.7	106.7

DEA days after 50 % emergence I the control group SD Standard deviation CV coefficient of variation
Rep. Replicate 8 seeds were sown for each replicate
No significant difference between control and treatment

Table 16: Phytotoxicity (% chlorosis, necrosis, deformation, stunting) after application of GLOB1911F in seedling emergence and growth test in wheat

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
7 DAE	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0
14 DAE	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0
21 DAE	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0

DAE days after 50 % emergence in the control group SD Standard deviation Rep. Replicate

Table 17: Shoot fresh weight [g per replicate] of wheat 21 DAE in seedling emergence and growth test with GLOB1911F

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
0-21 DAE	Rep. 1	56.967	58.436	57.976	48.149	56.164	55.676
	Rep. 2	45.324	50.996	45.859	48.415	52.797	55.616
	Rep. 3	57.551	57.151	54.266	57.811	53.439	59.640
	Rep. 4	50.850	58.464	58.552	55.382	56.584	59.108
	Mean [g]	52.7	56.3	54.2	52.4	54.7	57.5
	SD	5.8	3.6	5.9	4.9	1.9	2.2
	CV [%]	10.9	6.3	10.8	9.3	3.5	3.8
	Inhibition [%]	--	-6.8	-2.8	0.4	-3.9	-9.2
	Compared to control [%]	100.0	106.8	102.8	99.6	103.9	109.2

DAE days after 50 % emergence in the control group SD Standard deviation CV coefficient of variation
Rep. Replicate No significant difference between control and treatment

Appendix 1/ 2: Assessment data of onion

Table 18: BBCH stage of onion in seedling emergence and growth test with GLOB1911F (mean of all replicates)

GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
7 DAE	10-11	10-11	10-11	10-11	10-11	10-11
14 DAE	11	11	11	11	11	11
21 DAE	12	12	12	12	12	12

DAE days after 50 % emergence I the control group

Table 19: Number of living plants in onion in seedling emergence and growth test with GLOB1911F

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
7 DAE	Rep. 1	4	5	6	6	6	5
	Rep. 2	5	5	6	5	5	6
	Rep. 3	6	4	5	6	6	4
	Rep. 4	5	6	5	5	5	5
	Rep. 5	6	6	6	5	5	5
	Mean	5.2	5.2	5.6	5.4	5.4	5.0
	SD	0.8	0.8	0.5	0.5	0.5	0.7
14 DAE	Rep. 1	4	5	6	6	6	5
	Rep. 2	5	5	6	5	5	6
	Rep. 3	6	4	5	6	6	4
	Rep. 4	5	6	5	5	5	5
	Rep. 5	6	6	6	5	5	5
	Mean	5.2	5.2	5.6	5.4	5.4	5.0
	SD	0.8	0.8	0.5	0.5	0.5	0.7
21 DAE	Rep. 1	4	5	6	6	6	5
	Rep. 2	5	5	6	5	5	6
	Rep. 3	6	4	5	6	6	4
	Rep. 4	5	6	5	5	5	5
	Rep. 5	6	6	6	5	5	5
	Mean	5.2	5.2	5.6	5.4	5.4	5.0
	SD	0.8	0.8	0.5	0.5	0.5	0.7
	CV [%]	16.1	16.1	9.8	10.1	10.1	14.1
	Inhibition [%]	--	0.0	-7.7	-3.8	-3.8	3.8
	Compared to control [%]	100.0	100.0	107.7	103.8	103.8	96.2

DAE days after 50 % emergence in the control group SD Standard deviation CV coefficient of variation
Rep. Replicate
6 seeds were sown for each replicate
No significant difference between control and treatment

Table 20: Number of emerged plants in onion in seedling emergence and growth test with GLOB1911F 0-21 DAE

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
0-21 DAE	Rep. 1	4	5	6	6	6	5
	Rep. 2	5	5	6	5	5	6
	Rep. 3	6	4	5	6	6	4
	Rep. 4	5	6	5	5	5	5
	Rep. 5	6	6	6	5	5	5
	Mean	5.2	5.2	5.6	5.4	5.4	5.0
	SD	0.8	0.8	0.5	0.5	0.5	0.7
	CV [%]	16.1	16.1	9.8	10.1	10.1	14.1
	Inhibition [%]	--	0.0	-7.7	-3.8	-3.8	3.8
	Compared to control [%]	100.0	100.0	107.7	103.8	103.8	96.2

DAE days after 50 % emergence in the control group SD Standard deviation CV coefficient of variation
Rep. Replicate
6 seeds were sown for each replicate
No significant difference between control and treatment

Table 21: Phytotoxicity (% chlorosis. necrosis. deformation. stunting) after application of GLOB1911F in seedling emergence and growth test in onion

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
7 DAE	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Rep. 5	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0
14 DAE	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Rep. 5	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0
21 DAE	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Rep. 5	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0

DAE days after 50 % emergence in the control group SD Standard deviation Rep. Replicate

Table 22: Shoot fresh weight [g per replicate] of onion 21 DAE in seedling emergence and growth test with GLOB1911F

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
0-21 DAE	Rep. 1	2.960	3.104	4.018	5.990	3.800	3.646
	Rep. 2	3.294	3.320	4.744	3.027	3.287	4.639
	Rep. 3	6.207	3.013	3.603	4.453	4.419	3.228
	Rep. 4	2.359	3.624	3.895	3.270	3.934	2.795
	Rep. 5	4.786	3.615	4.168	2.789	3.427	4.429
	Mean [g]	3.9	3.3	4.1	3.9	3.8	3.7
	SD	1.6	0.3	0.4	1.3	0.4	0.8
	CV [%]	39.8	8.5	10.3	34.0	11.9	20.9
	Inhibition [%]	--	14.9	-4.2	0.4	3.8	4.4
	Compared to control [%]	100.0	85.1	104.2	99.6	96.2	95.6

DAE days after 50 % emergence in the control group SD Standard deviation CV coefficient of variation
Rep. Replicate
No significant difference between control and treatment

Appendix 1/ 3: Assessment data of lettuce

Table 23: BBCH stage of lettuce in seedling emergence and growth test with GLOB1911F (mean of all replicates)

GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
7 DAE	12	12	12	12	12	12
14 DAE	15-16	15-16	15-16	15-16	15-16	15-16
21 DAE	19	19	19	19	19	19

DAE days after 50 % emergence in the control group

Table 24: Number of living plants in lettuce in seedling emergence and growth test with GLOB1911F

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
7 DAE	Rep. 1	6	5	4	5	6	6
	Rep. 2	5	5	6	6	6	6
	Rep. 3	5	4	4	6	5	5
	Rep. 4	5	5	6	6	6	6
	Rep. 5	5	6	6	6	6	6
	Mean	5.2	5.0	5.2	5.8	5.8	5.8
	SD	0.4	0.7	1.1	0.4	0.4	0.4
14 DAE	Rep. 1	6	5	4	5	6	6
	Rep. 2	5	5	6	6	6	6
	Rep. 3	5	4	4	6	5	5
	Rep. 4	5	5	6	6	6	6
	Rep. 5	5	6	6	6	6	6
	Mean	5.2	5.0	5.2	5.8	5.8	5.8
	SD	0.4	0.7	1.1	0.4	0.4	0.4
21 DAE	Rep. 1	6	5	4	5	6	6
	Rep. 2	5	5	6	6	6	6
	Rep. 3	5	4	4	6	5	5
	Rep. 4	5	5	6	6	6	6
	Rep. 5	5	6	6	6	6	6
	Mean	5.2	5.0	5.2	5.8	5.8	5.8
	SD	0.4	0.7	1.1	0.4	0.4	0.4
	CV [%]	8.6	14.1	21.1	7.7	7.7	7.7
	Inhibition [%]	--	3.8	0.0	-11.5	-11.5	-11.5
	Compared to control [%]	100.0	96.2	100.0	111.5	111.5	111.5

DAE days after 50 % emergence in the control group SD Standard deviation CV coefficient of variation
Rep. Replicate
6 seeds were sown for each replicate
No significant difference between control and treatment

Table 25: Number of emerged plants in lettuce in seedling emergence and growth test with GLOB1911F 0-21 DAE

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
0-21 DAE	Rep. 1	6	5	4	5	6	6
	Rep. 2	5	5	6	6	6	6
	Rep. 3	5	4	4	6	5	5
	Rep. 4	5	5	6	6	6	6
	Rep. 5	5	6	6	6	6	6
	Mean	5.2	5.0	5.2	5.8	5.8	5.8
	SD	0.4	0.7	1.1	0.4	0.4	0.4
	CV [%]	8.6	14.1	21.1	7.7	7.7	7.7
	Inhibition [%]	--	3.8	0.0	-11.5	-11.5	-11.5
	Compared to control [%]	100.0	96.2	100.0	111.5	111.5	111.5

DAE days after 50 % emergence in the control group SD Standard deviation CV coefficient of variation
Rep. Replicate
6 seeds were sown for each replicate
No significant difference between control and treatment

Table 26: Phytotoxicity (% chlorosis. necrosis. deformation. stunting) after application of GLOB1911F in seedling emergence and growth test in lettuce

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
7 DAE	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Rep. 5	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0
14 DAE	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Rep. 5	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0
21 DAE	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Rep. 5	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0

DAE days after 50 % emergence in the control group SD Standard deviation Rep. Replicate

Table 27: Shoot fresh weight [g per replicate] of lettuce 21 DAE in seedling emergence and growth test with GLOB1911F

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
0-21 DAE	Rep. 1	91.769	84.130	80.503	96.926	108.465	101.514
	Rep. 2	90.471	88.839	95.009	99.629	97.967	99.467
	Rep. 3	90.594	66.656	87.351	112.316	96.349	98.809
	Rep. 4	88.228	87.707	103.387	106.401	103.816	107.353
	Rep. 5	90.484	97.871	111.397	107.202	110.687	109.163
	Mean [g]	90.3	85.0	95.5	104.5	103.5	103.3
	SD	1.3	11.5	12.3	6.2	6.3	4.7
	CV [%]	1.4	13.5	12.9	5.9	6.1	4.6
	Inhibition [%]	--	5.8	-5.8	-15.7	-14.6	-14.3
	Compared to control [%]	100.0	94.2	105.8	115.7	114.6	114.3

DAE days after 50 % emergence in the control group SD Standard deviation CV coefficient of variation
Rep. Replicate
No significant difference between control and treatment

Appendix 1/ 4: Assessment data of carrot

Table 28: BBCH stage of carrot in seedling emergence and growth test with GLOB1911F (mean of all replicates)

GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
7 DAE	10-11	10-11	10-11	10-11	10-11	10-11
14 DAE	12	12	12	12	12	12
21 DAE	13-14	13-14	13-14	13-14	13-14	13-14

DAE days after 50 % emergence in the control group

Table 29: Number of living plants in carrot in seedling emergence and growth test with GLOB1911F

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
7 DAE	Rep. 1	6	6	7	8	7	7
	Rep. 2	8	8	7	7	6	7
	Rep. 3	6	6	6	7	7	8
	Rep. 4	7	6	6	5	6	6
	Mean	6.8	6.5	6.5	6.8	6.5	7.0
	SD	1.0	1.0	0.6	1.3	0.6	0.8
14 DAE	Rep. 1	6	6	7	8	7	7
	Rep. 2	8	8	7	7	6	7
	Rep. 3	6	6	6	7	7	8
	Rep. 4	7	6	6	6	6	6
	Mean	6.8	6.5	6.5	7.0	6.5	7.0
	SD	1.0	1.0	0.6	0.8	0.6	0.8
21 DAE	Rep. 1	6	6	7	8	7	7
	Rep. 2	8	8	7	7	6	7
	Rep. 3	6	6	6	7	7	8
	Rep. 4	7	6	6	6	6	6
	Mean	6.8	6.5	6.5	7.0	6.5	7.0
	SD	1.0	1.0	0.6	0.8	0.6	0.8
	CV [%]	14.2	15.4	8.9	11.7	8.9	11.7
	Inhibition [%]	--	3.7	3.7	-3.7	3.7	-3.7
	Compared to control [%]	100.0	96.3	96.3	103.7	96.3	103.7

DAE days after 50 % emergence in the control group SD Standard deviation CV coefficient of variation
Rep. Replicate
8 seeds were sown for each replicate
No significant difference between control and treatment

Table 30: Number of emerged plants in carrot in seedling emergence and growth test with GLOB1911F 0-21 DAE

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
0-21 DAE	Rep. 1	6	6	7	8	7	7
	Rep. 2	8	8	7	7	6	7
	Rep. 3	6	6	6	7	7	8
	Rep. 4	7	6	6	6	6	6
	Mean	6.8	6.5	6.5	7.0	6.5	7.0
	SD	1.0	1.0	0.6	0.8	0.6	0.8
	CV [%]	14.2	15.4	8.9	11.7	8.9	11.7
	Inhibition [%]	--	3.7	3.7	-3.7	3.7	-3.7
	Compared to control [%]	100.0	96.3	96.3	103.7	96.3	103.7

DAE days after 50 % emergence in the control group SD Standard deviation CV coefficient of variation
8 seeds were sown for each replicate
No significant difference between control and treatment

Table 31: Phytotoxicity (% chlorosis. necrosis. deformation. stunting) after application of GLOB1911F in seedling emergence and growth test in carrot

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
7 DAE	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0
14 DAE	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0
21 DAE	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0

DAE days after 50 % emergence in the control group SD Standard deviation Rep. Replicate

Table 32: Shoot fresh weight [g per replicate] of carrot 21 DAE in seedling emergence and growth test with GLOB1911F

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
0-21 DAE	Rep. 1	9.370	10.050	12.209	14.087	15.186	15.053
	Rep. 2	10.833	11.506	13.209	13.881	9.329	13.614
	Rep. 3	10.709	12.341	8.149	10.563	11.131	13.267
	Rep. 4	12.706	9.420	9.995	7.146	10.021	12.002
	Mean [g]	10.9	10.8	10.9	11.4	11.4	13.5
	SD	1.4	1.3	2.3	3.3	2.6	1.3
	CV [%]	12.6	12.3	20.8	28.7	23.0	9.3
	Inhibition [%]	--	0.7	0.1	-4.7	-4.7	-23.7
	Compared to control [%]	100.0	99.3	99.9	104.7	104.7	123.7

DAE days after 50 % emergence in the control group SD Standard deviation CV coefficient of variation
Rep. Replicate No significant difference between control and treatment

Appendix 1/ 5: Assessment data of white mustard

Table 33: BBCH stage of white mustard in seedling emergence and growth test with GLOB1911F (mean of all replicates)

GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
7 DAE	13-14	13-14	13-14	13-14	13-14	13-14
14 DAE	31	31	31	31	31	31
21 DAE	51-61	51-61	51-61	51-61	51-61	51-61

DAE days after 50 % emergence in the control group

Table 34: Number of living plants in white mustard in seedling emergence and growth test with GLOB1911F

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
7 DAE	Rep. 1	6	5	6	6	6	6
	Rep. 2	6	6	6	6	6	6
	Rep. 3	6	6	6	6	6	6
	Rep. 4	6	6	6	6	6	6
	Rep. 5	6	6	6	6	6	6
	Mean	6.0	5.8	6.0	6.0	6.0	6.0
	SD	0.0	0.4	0.0	0.0	0.0	0.0
14 DAE	Rep. 1	6	5	6	6	6	6
	Rep. 2	6	6	6	6	6	6
	Rep. 3	6	6	6	6	6	6
	Rep. 4	6	6	6	6	6	6
	Rep. 5	6	6	6	6	6	6
	Mean	6.0	5.8	6.0	6.0	6.0	6.0
	SD	0.0	0.4	0.0	0.0	0.0	0.0
21 DAE	Rep. 1	6	5	6	6	6	6
	Rep. 2	6	6	6	6	6	6
	Rep. 3	6	6	6	6	6	6
	Rep. 4	6	6	6	6	6	6
	Rep. 5	6	6	6	6	6	6
	Mean	6.0	5.8	6.0	6.0	6.0	6.0
	SD	0.0	0.4	0.0	0.0	0.0	0.0
	CV [%]	0.0	7.7	0.0	0.0	0.0	0.0
	Inhibition [%]	--	3.3	0.0	0.0	0.0	0.0
	compared to control [%]	100.0	96.7	100.0	100.0	100.0	100.0

DAE days after 50 % emergence in the control group SD Standard deviation CV coefficient of variation
Rep. Replicate
6 seeds were sown for each replicate
No significant difference between control and treatment

Table 35: Number of emerged plants in white mustard in seedling emergence and growth test with GLOB1911F 0-21 DAE

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
0-21 DAE	Rep. 1	6	5	6	6	6	6
	Rep. 2	6	6	6	6	6	6
	Rep. 3	6	6	6	6	6	6
	Rep. 4	6	6	6	6	6	6
	Rep. 5	6	6	6	6	6	6
	Mean	6.0	5.8	6.0	6.0	6.0	6.0
	SD	0.0	0.4	0.0	0.0	0.0	0.0
	CV [%]	0.0	7.7	0.0	0.0	0.0	0.0
	Inhibition [%]	--	3.3	0.0	0.0	0.0	0.0
	Compared to control [%]	100.0	96.7	100.0	100.0	100.0	100.0

DAE days after 50 % emergence in the control group SD Standard deviation CV coefficient of variation
Rep. Replicate
6 seeds were sown for each replicate
No significant difference between control and treatment

Table 36: Phytotoxicity (% chlorosis. necrosis. deformation. stunting) after application of GLOB1911F in seedling emergence and growth test in white mustard

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
7 DAE	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Rep. 5	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0
14 DAE	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Rep. 5	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0
21 DAE	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Rep. 5	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0

DAE days after 50 % emergence in the control group SD Standard deviation Rep. Replicate

Table 37: Shoot fresh weight [g per replicate] of white mustard 21 DAE in seedling emergence and growth test with GLOB1911F

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
0-21 DAE	Rep. 1	159.427	149.736	158.586	148.049	151.765	139.258
	Rep. 2	163.857	148.918	146.623	154.233	159.779	154.247
	Rep. 3	146.618	155.868	162.242	153.163	157.848	142.369
	Rep. 4	157.475	159.506	161.861	154.259	144.547	155.207
	Rep. 5	150.801	153.538	156.049	162.806	156.574	143.559
	Mean [g]	155.6	153.5	157.1	154.5	154.1	146.9
	SD	6.9	4.4	6.4	5.3	6.1	7.3
	CV [%]	4.4	2.9	4.1	3.4	4.0	5.0
	Inhibition [%]	--	1.4	-0.9	0.7	1.0	5.6
	Compared to control [%]	100.0	98.6	100.9	99.3	99.0	94.4

DAE days after 50 % emergence in the control group SD Standard deviation CV coefficient of variation
Rep. Replicate
No significant difference between control and treatment

Appendix 1/ 6: Assessment data of tomato

Table 38: BBCH stage of tomato in seedling emergence and growth test with GLOB1911F (mean of all replicates)

GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
7 DAE	12	12	12	12	12	12
14 DAE	13-14	13-14	13-14	13-14	13-14	13-14
21 DAE	15-21	15-21	15-21	15-21	15-21	15-21

DAE days after 50 % emergence in the control group

Table 39: Number of living plants in tomato in seedling emergence and growth test with GLOB1911F

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
7 DAE	Rep. 1	6	5	6	5	5	5
	Rep. 2	6	6	5	5	6	5
	Rep. 3	6	5	6	6	5	6
	Rep. 4	6	5	6	6	5	6
	Rep. 5	5	6	6	6	6	6
	Mean	5.8	5.4	5.8	5.6	5.4	5.6
	SD	0.4	0.5	0.4	0.5	0.5	0.5
14 DAE	Rep. 1	6	5	6	5	5	5
	Rep. 2	6	6	5	5	6	5
	Rep. 3	6	5	6	6	5	6
	Rep. 4	6	5	6	6	5	6
	Rep. 5	5	6	6	6	6	6
	Mean	5.8	5.4	5.8	5.6	5.4	5.6
	SD	0.4	0.5	0.4	0.5	0.5	0.5
21 DAE	Rep. 1	6	5	6	5	5	5
	Rep. 2	6	6	5	5	6	5
	Rep. 3	6	5	6	6	5	6
	Rep. 4	6	5	6	6	5	6
	Rep. 5	5	6	6	6	6	6
	Mean	5.8	5.4	5.8	5.6	5.4	5.6
	SD	0.4	0.5	0.4	0.5	0.5	0.5
	CV [%]	7.7	10.1	7.7	9.8	10.1	9.8
	Inhibition [%]	--	6.9	0.0	3.4	6.9	3.4
	Compared to control [%]	100.0	93.1	100.0	96.6	93.1	96.6

DAE days after 50 % emergence in the control group SD Standard deviation CV coefficient of variation
Rep. Replicate
6 seeds were sown for each replicate
No significant difference between control and treatment

Table 40: Number of emerged plants in tomato in seedling emergence and growth test with GLOB1911F 0-21 DAE

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
0-21 DAE	Rep. 1	6	5	6	5	5	5
	Rep. 2	6	6	5	5	6	5
	Rep. 3	6	5	6	6	5	6
	Rep. 4	6	5	6	6	5	6
	Rep. 5	5	6	6	6	6	6
	Mean	5.8	5.4	5.8	5.6	5.4	5.6
	SD	0.4	0.5	0.4	0.5	0.5	0.5
	CV [%]	7.7	10.1	7.7	9.8	10.1	9.8
	Inhibition [%]	--	6.9	0.0	3.4	6.9	3.4
	Compared to control [%]	100.0	93.1	100.0	96.6	93.1	96.6

DAE days after 50 % emergence in the control group SD Standard deviation CV coefficient of variation
Rep. Replicate
6 seeds were sown for each replicate
No significant difference between control and treatment

Table 41: Phytotoxicity (% chlorosis. necrosis. deformation. stunting) after application of GLOB1911F in seedling emergence and growth test in tomato

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
7 DAE	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Rep. 5	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0
14 DAE	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Rep. 5	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0
21 DAE	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Rep. 5	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0

DAE days after 50 % emergence in the control group SD Standard deviation Rep. Replicate

Table 42: Shoot fresh weight [g per replicate] of tomato 21 DAE in seedling emergence and growth test with GLOB1911F

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
0-21 DAE	Rep. 1	94.625	87.996	90.449	90.453	89.110	83.792
	Rep. 2	99.741	97.252	88.539	84.967	108.495	93.775
	Rep. 3	86.269	85.559	89.774	89.901	87.363	95.874
	Rep. 4	95.309	89.991	96.707	90.377	92.209	92.025
	Rep. 5	92.206	88.398	91.333	100.109	93.668	88.345
	Mean [g]	93.6	89.8	91.4	91.2	94.2	90.8
	SD	4.9	4.4	3.2	5.5	8.4	4.8
	CV [%]	5.3	4.9	3.5	6.0	8.9	5.3
	Inhibition [%]	--	4.0	2.4	2.6	-0.6	3.1
	Compared to control [%]	100.0	96.0	97.6	97.4	100.6	96.9

DAE days after 50 % emergence in the control group SD Standard deviation CV coefficient of variation
Rep. Replicate
No significant difference between control and treatment

Conclusion

The pre-emergence application of GLOB1911F at application rates of 0.063, 0.125, 0.250, 0.500, 1.000 L test item/ha in 200 L water/ha caused no adverse effects on seedling emergence, survival of emerged plants, phytotoxicity and shoot fresh weight of the six terrestrial plant species wheat (*Triticum aestivum),* onion (*Allium cepa*), lettuce (*Lactuca sativa*), carrot (*Daucus carota*), white mustard (*Sinapis alba*) and tomato (*Lycopersicon esculentum*).

Comments of zRMS:	The study is considered acceptable; all validity criteria were fulfilled. No effect on plant survival could be detected after application of GLOB1911F at rates of 0.063, 0.125, 0.250, 0.500, 1.000 L/ha to tested plant species at BBCH stage 12-14. The NOER for plant survival and biomass is higher or equal than the highest tested application rate of 1.000 L GLOB1911F/ha for all tested plant species. The study results were added at the end of summary.

Reference:	KCP 10.6.2-02
Report	Effect of GLOB1911F on vegetative vigour of six non-target terrestrial plant species under greenhouse conditions, Kästner K, 2020b, 20 46 PVV 0002.
Guideline(s):	Yes, OECD 227 (2006)
Deviations:	No
GLP:	Yes
Acceptability:	YES

Executive summary

The purpose of the study was to determine potential effects of the test item GLOB1911F on vegetative vigour of higher terrestrial plants after application at BBCH stage 12-14 under controlled environmental conditions. Endpoints used to characterise the adverse effects of the test item were plant survival, biomass (shoot fresh weight) and visible detrimental effects (e.g. chlorosis, necrosis, deformation, stunting). Statistical analysis was performed to determine the significance of the obtained results compared to the control. The test was performed following the recommendations of the OECD Guideline 227 (2006).

Materials and methods

Test item:	GLOB1911F , Batch No.: BRN3030 Content of a.i.: Difenoconazole 500 g/L (nominal), 521.5 g/L (analysed)
Test species:	wheat (*Triticum aestivum*), onion (*Allium cepa*), lettuce (*Lactuca sativa),* carrot (*Daucus carota*), white mustard (*Sinapis alba*), tomato (*Lycopersicon esculentum*)
Test design:	The vegetative vigour test was conducted in the greenhouse in Gerichshain, Kupferstraße 6, Germany. The test was performed in

	January and February 2020 from application until 21 days after treatment (DAT) Effects on non-target plants: 21 days; 5 test item treatment groups and an untreated control group, 8 replicates of each treatment for each species.
Endpoints:	Endpoints observed 21 DAT were plant survival (mortality), biomass (shoot fresh weight) and visible phytotoxicity.
Test conditions:	Temperature: 20.0 - 21.8 °C Light intensity: 332.8-371.2 µmol/m^2/s Photoperiod: light : dark = 16 h : 8 h
Treatments:	Control (untreated water only), test item (GLOB1911F)
Test concentrations:	0.063, 0.125, 0.250, 0.500, 1.000 L test item/ha (spacing factor 2) in 200 L water/ha
Statistics:	Statistical analysis of data was performed using the software ToxRat Professional (ToxRatPro Version 3.3.0).
Dates of work:	27.01.2020 – 17.02.2020

Results and discussions

The effects of GLOB1911F after application at BBCH stage 12-14 on different plant species were examined at a nominal application rates of 0.063, 0.125, 0.250, 0.500, 1.000 L test item/ha in 200 L water/ha under greenhouse conditions. The test endpoints were plant survival (mortality), shoot fresh weight and visual phytotoxicity 21 days after treatment (DAT).

Plant survival
No effect on plant survival could be detected after application of GLOB1911F at rates of 0.063, 0.125, 0.250, 0.500, 1.000 L/ha to tested plant species at BBCH stage 12-14.

Table A24: Effects of GLOB1911F on plant survival 21 DAT in vegetative vigour test

Test species	Application rates of GLOB1911F [L test item/ha in 200 L/ha water]	Number of living plants			Survival
		7 DAT	14 DAT	21 DAT	[%]
Wheat	0.000	32	32	32	100
	0.063	32	32	32	100
	0.125	32	32	32	100
	0.250	32	32	32	100
	0.500	32	32	32	100
	1.000	32	32	32	100
Onion	0.000	32	32	32	100
	0.063	32	32	32	100
	0.125	32	32	32	100
	0.250	32	32	32	100
	0.500	32	32	32	100
	1.000	32	32	32	100
Lettuce	0.000	32	32	32	100
	0.063	32	32	32	100
	0.125	32	32	32	100
	0.250	32	32	32	100
	0.500	32	32	32	100
	1.000	32	32	32	100
Carrot	0.000	32	32	32	100
	0.063	32	32	32	100
	0.125	32	32	32	100
	0.250	32	32	32	100
	0.500	32	32	32	100
	1.000	32	32	32	100
White mustard	0.000	32	32	32	100
	0.063	32	32	32	100
	0.125	32	32	32	100
	0.250	32	32	32	100
	0.500	32	32	32	100
	1.000	32	32	32	100
Tomato	0.000	32	32	32	100
	0.063	32	32	32	100
	0.125	32	32	32	100
	0.250	32	32	32	100
	0.500	32	32	32	100
	1.000	32	32	32	100

DAT days after treatment
No significant difference between control and treatment

Phytotoxicity

The application of 0.063, 0.125, 0.250, 0.500, 1.000 L GLOB1911F/ha at BBCH stage 12-14 caused no visible adverse phytotoxic effects on tested plant species.

Shoot fresh weight

No significant biomass reduction could be detected on tested plant species after application at rates of 0.063, 0.125, 0.250, 0.500, 1.000 L GLOB1911F/ha at BBCH stage 12-14.

Table A25: Effects of GLOB1911F on plant survival 21 DAT in vegetative vigour test

Test Species	Application rates of GLOB1911F [L test item/ha in 200 L/ha water]					
	0.000	**0.063**	**0.125**	**0.250**	**0.500**	**1.000**
Wheat						
Mean [g]	43.1	44.6	43.8	44.9	43.5	45.1
SD	2.2	1.1	2.2	1.8	2.7	0.9
CV [%]	5.1	2.5	5.1	3.9	6.2	2.0
Compared to control [%]	100.0	103.5	101.7	104.4	100.9	104.8
Onion						
Mean [g]	47.2	49.2	51.8	50.5	53.7	57.1
SD	9.4	5.9	7.8	11.1	6.0	5.0
CV [%]	19.9	11.9	15.0	22.1	11.2	8.7
Compared to control [%]	100.0	104.3	109.7	106.9	113.8	121.0
Lettuce						
Mean [g]	181.2	185.8	178.4	175.9	186.5	183.7
SD	9.9	6.9	7.3	5.8	4.3	4.6
CV [%]	5.5	3.7	4.1	3.3	2.3	2.5
Compared to control [%]	100.0	102.6	98.5	97.1	102.9	101.4
Carrot						
Mean [g]	35.8	36.6	35.7	38.2	37.3	37.2
SD	1.7	2.0	4.3	2.3	2.1	3.4
CV [%]	4.8	5.4	12.1	5.9	5.6	9.0
Compared to control [%]	100.0	102.3	99.6	106.7	104.0	103.8
White mustard						
Mean [g]	121.8	117.8	126.4	129.1	128.0	125.8
SD	13.7	6.2	7.5	10.7	5.5	9.4
CV [%]	11.2	5.3	5.9	8.3	4.3	7.5
Compared to control [%]	100.0	96.7	103.8	106.1	105.1	103.3
Tomato						
Mean [g]	212.6	217.4	219.1	212.0	208.6	214.5
SD	9.3	6.9	7.2	9.2	8.0	7.2
CV [%]	4.4	3.2	3.3	4.4	3.8	3.3
Compared to control [%]	100.0	102.3	103.1	99.7	98.1	100.9

DAT days after treatment SD Standard deviation CV coefficient of variation
No significant difference between control and treatment

The NOER for plant survival and biomass is higher or equal than the highest tested application rate of 1.000 L GLOB1911F/ha for all tested plant species.

All validity criteria were met:
- Seedling emergence: ≥ 70 % (actual 84 - 100 %)
For control group:
- Mean plant survival for the duration of the study: ≥ 90 % (actual 100 %)
- No visible phytotoxic effects
- Environmental conditions were identical and growing media contain the same amount of soil from the same source.

The study results are presented in the tables on following pages.

Table 15: Phytotoxicity (% chlorosis, necrosis, deformation, stunting) after application of GLOB1911F in vegetative vigour test in wheat

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
7 DAT	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Rep. 5	0	0	0	0	0	0
	Rep. 6	0	0	0	0	0	0
	Rep. 7	0	0	0	0	0	0
	Rep. 8	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0
14 DAT	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Rep. 5	0	0	0	0	0	0
	Rep. 6	0	0	0	0	0	0
	Rep. 7	0	0	0	0	0	0
	Rep. 8	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0
21 DAT	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Rep. 5	0	0	0	0	0	0
	Rep. 6	0	0	0	0	0	0
	Rep. 7	0	0	0	0	0	0
	Rep. 8	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0

DAT days after treatment SD Standard deviation

Table 16: Shoot fresh weight (g per replicate) of wheat 21 DAT in vegetative vigour test with GLOB1911F

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
21 DAT	Rep. 1	42.828	45.125	45.610	46.330	41.128	45.809
	Rep. 2	45.307	43.410	44.749	45.922	44.379	46.033
	Rep. 3	45.506	44.957	44.471	45.871	47.235	44.748
	Rep. 4	39.233	44.348	47.379	43.054	44.504	44.285
	Rep. 5	42.367	44.149	40.707	43.665	42.868	44.000
	Rep. 6	44.576	44.423	42.788	42.391	38.383	44.814
	Rep. 7	40.796	46.836	43.273	47.402	44.029	46.572
	Rep. 8	43.859	43.295	41.195	44.921	45.204	44.657
	Mean	43.1	44.6	43.8	44.9	43.5	45.1
	SD	2.2	1.1	2.2	1.8	2.7	0.9
	CV [%]	5.1	2.5	5.1	3.9	6.2	2.0
	Inhibition [%]	--	-3.5	-1.7	-4.4	-0.9	-4.8
	Compared to control [%]	100.0	103.5	101.7	104.4	100.9	104.8

DAT days after treatment SD Standard deviation CV coefficient of variation
No significant difference between control and treatment

Table 19: Phytotoxicity (% chlorosis, necrosis, deformation, stunting) after application of GLOB1911F in vegetative vigour test in onion

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
7 DAT	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Rep. 5	0	0	0	0	0	0
	Rep. 6	0	0	0	0	0	0
	Rep. 7	0	0	0	0	0	0
	Rep. 8	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0
14 DAT	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Rep. 5	0	0	0	0	0	0
	Rep. 6	0	0	0	0	0	0
	Rep. 7	0	0	0	0	0	0
	Rep. 8	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0
21 DAT	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Rep. 5	0	0	0	0	0	0
	Rep. 6	0	0	0	0	0	0
	Rep. 7	0	0	0	0	0	0
	Rep. 8	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0

DAT days after treatment SD Standard deviation

Table 20: Shoot fresh weight (g per replicate) of onion 21 DAT in vegetative vigour test with GLOB1911F

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
21 DAT	Rep. 1	30.940	54.712	62.323	56.088	55.150	57.608
	Rep. 2	46.478	44.692	59.377	55.109	48.052	64.984
	Rep. 3	58.487	53.145	42.580	54.369	49.308	57.973
	Rep. 4	55.103	50.129	45.104	35.570	47.700	59.973
	Rep. 5	47.870	43.874	60.699	49.347	57.991	50.967
	Rep. 6	55.467	57.207	47.104	60.436	65.453	57.517
	Rep. 7	37.528	49.776	48.463	61.310	55.045	49.198
	Rep. 8	45.700	40.211	48.555	31.450	51.012	58.622
	Mean	47.2	49.2	51.8	50.5	53.7	57.1
	SD	9.4	5.9	7.8	11.1	6.0	5.0
	CV [%]	19.9	11.9	15.0	22.1	11.2	8.7
	Inhibition [%]	--	-4.3	-9.7	-6.9	-13.8	-21.0
	Compared to control [%]	100.0	104.3	109.7	106.9	113.8	121.0

DAT days after treatment SD Standard deviation CV coefficient of variation
No significant difference between control and treatment

Table 23: Phytotoxicity (% chlorosis, necrosis, deformation, stunting) after application of GLOB1911F in vegetative vigour test in lettuce

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
7 DAT	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Rep. 5	0	0	0	0	0	0
	Rep. 6	0	0	0	0	0	0
	Rep. 7	0	0	0	0	0	0
	Rep. 8	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0
14 DAT	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Rep. 5	0	0	0	0	0	0
	Rep. 6	0	0	0	0	0	0
	Rep. 7	0	0	0	0	0	0
	Rep. 8	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0
21 DAT	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Rep. 5	0	0	0	0	0	0
	Rep. 6	0	0	0	0	0	0
	Rep. 7	0	0	0	0	0	0
	Rep. 8	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0

DAT days after treatment SD Standard deviation

Table 24: Shoot fresh weight (g per replicate) of lettuce 21 DAT in vegetative vigour test with GLOB1911F

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
21 DAT	Rep. 1	203.981	180.303	181.336	168.903	185.238	181.542
	Rep. 2	173.909	195.625	170.173	178.734	187.876	178.801
	Rep. 3	172.006	178.255	174.328	176.894	195.889	189.875
	Rep. 4	183.624	187.651	175.888	171.978	181.200	183.352
	Rep. 5	180.139	184.610	192.490	180.878	185.170	184.519
	Rep. 6	179.526	196.311	176.254	167.030	186.687	180.295
	Rep. 7	177.104	181.636	172.225	180.209	183.473	180.217
	Rep. 8	179.032	182.221	184.359	182.319	186.235	191.073
	Mean	181.2	185.8	178.4	175.9	186.5	183.7
	SD	9.9	6.9	7.3	5.8	4.3	4.6
	CV [%]	5.5	3.7	4.1	3.3	2.3	2.5
	Inhibition [%]	--	-2.6	1.5	2.9	-2.9	-1.4
	Compared to control [%]	100.0	102.6	98.5	97.1	102.9	101.4

DAT days after treatment SD Standard deviation CV coefficient of variation
No significant difference between control and treatment

Table 27: Phytotoxicity (% chlorosis, necrosis, deformation, stunting) after application of GLOB1911F in vegetative vigour test in carrot

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
7 DAT	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Rep. 5	0	0	0	0	0	0
	Rep. 6	0	0	0	0	0	0
	Rep. 7	0	0	0	0	0	0
	Rep. 8	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0
14 DAT	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Rep. 5	0	0	0	0	0	0
	Rep. 6	0	0	0	0	0	0
	Rep. 7	0	0	0	0	0	0
	Rep. 8	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0
21 DAT	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Rep. 5	0	0	0	0	0	0
	Rep. 6	0	0	0	0	0	0
	Rep. 7	0	0	0	0	0	0
	Rep. 8	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0

DAT days after treatment SD Standard deviation

Table 28: Shoot fresh weight (g per replicate) of carrot 21 DAT in vegetative vigour test with GLOB1911F

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
21 DAT	Rep. 1	36.462	36.086	28.489	39.809	35.546	36.269
	Rep. 2	35.658	35.912	36.174	40.331	36.301	38.203
	Rep. 3	36.662	35.912	37.005	35.413	40.704	37.857
	Rep. 4	37.832	34.807	41.909	39.762	36.894	40.047
	Rep. 5	34.489	33.834	36.425	36.694	34.720	38.878
	Rep. 6	35.286	38.465	39.950	40.069	38.027	38.820
	Rep. 7	37.677	38.973	33.365	34.762	39.755	38.146
	Rep. 8	32.599	39.187	32.071	39.028	36.188	29.323
	Mean	35.8	36.6	35.7	38.2	37.3	37.2
	SD	1.7	2.0	4.3	2.3	2.1	3.4
	CV [%]	4.8	5.4	12.1	5.9	5.6	9.0
	Inhibition [%]	--	-2.3	0.4	-6.7	-4.0	-3.8
	Compared to control [%]	100.0	102.3	99.6	106.7	104.0	103.8

DAT days after treatment SD Standard deviation CV coefficient of variation
No significant difference between control and treatment

Table 31: Phytotoxicity (% chlorosis, necrosis, deformation, stunting) after application of GLOB1911F in vegetative vigour test in white mustard

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
7 DAT	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Rep. 5	0	0	0	0	0	0
	Rep. 6	0	0	0	0	0	0
	Rep. 7	0	0	0	0	0	0
	Rep. 8	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0
14 DAT	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Rep. 5	0	0	0	0	0	0
	Rep. 6	0	0	0	0	0	0
	Rep. 7	0	0	0	0	0	0
	Rep. 8	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0
21 DAT	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Rep. 5	0	0	0	0	0	0
	Rep. 6	0	0	0	0	0	0
	Rep. 7	0	0	0	0	0	0
	Rep. 8	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0

DAT days after treatment SD Standard deviation

Table 32: Shoot fresh weight (g per replicate) of white mustard 21 DAT in vegetative vigour test with GLOB1911F

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
21 DAT	Rep. 1	128.605	119.572	121.559	135.118	131.693	125.454
	Rep. 2	136.638	123.915	133.398	131.509	131.243	122.732
	Rep. 3	115.321	120.482	133.653	127.462	118.957	118.378
	Rep. 4	96.303	115.822	117.584	146.545	130.434	132.117
	Rep. 5	133.900	119.585	126.590	130.694	125.367	114.446
	Rep. 6	120.455	124.735	130.038	119.567	127.237	119.034
	Rep. 7	131.485	112.181	133.241	131.906	136.158	143.645
	Rep. 8	111.302	106.043	114.959	110.370	122.938	130.480
	Mean	121.8	117.8	126.4	129.1	128.0	125.8
	SD	13.7	6.2	7.5	10.7	5.5	9.4
	CV [%]	11.2	5.3	5.9	8.3	4.3	7.5
	Inhibition [%]	--	3.3	-3.8	-6.1	-5.1	-3.3
	Compared to control [%]	100.0	96.7	103.8	106.1	105.1	103.3

DAT days after treatment SD Standard deviation CV coefficient of variation
No significant difference between control and treatment

Table 35: Phytotoxicity (% chlorosis, deformation, stunting) after application of GLOB1911F in vegetative vigour test in tomato

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
7 DAT	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Rep. 5	0	0	0	0	0	0
	Rep. 6	0	0	0	0	0	0
	Rep. 7	0	0	0	0	0	0
	Rep. 8	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0
14 DAT	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Rep. 5	0	0	0	0	0	0
	Rep. 6	0	0	0	0	0	0
	Rep. 7	0	0	0	0	0	0
	Rep. 8	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0
21 DAT	Rep. 1	0	0	0	0	0	0
	Rep. 2	0	0	0	0	0	0
	Rep. 3	0	0	0	0	0	0
	Rep. 4	0	0	0	0	0	0
	Rep. 5	0	0	0	0	0	0
	Rep. 6	0	0	0	0	0	0
	Rep. 7	0	0	0	0	0	0
	Rep. 8	0	0	0	0	0	0
	Mean	0.0	0.0	0.0	0.0	0.0	0.0
	SD	0.0	0.0	0.0	0.0	0.0	0.0

DAT days after treatment SD Standard deviation

Table 36: Shoot fresh weight (g per replicate) of tomato 21 DAT in vegetative vigour test with GLOB1911F

	GLOB1911F [L/ha]	0.000	0.063	0.125	0.250	0.500	1.000
21 DAT	Rep. 1	218.032	212.640	210.938	227.590	201.898	214.699
	Rep. 2	215.199	217.357	217.920	212.163	202.399	215.073
	Rep. 3	214.878	218.384	225.767	213.592	212.391	228.169
	Rep. 4	199.828	208.302	220.624	206.648	213.888	207.563
	Rep. 5	205.895	227.976	210.720	213.935	214.864	210.252
	Rep. 6	230.295	225.048	219.825	201.092	221.029	214.981
	Rep. 7	205.989	210.225	215.340	220.376	198.154	205.679
	Rep. 8	210.337	219.352	232.044	200.538	204.168	219.734
	Mean	212.6	217.4	219.1	212.0	208.6	214.5
	SD	9.3	6.9	7.2	9.2	8.0	7.2
	CV [%]	4.4	3.2	3.3	4.4	3.8	3.3
	Inhibition [%]	--	-2.3	-3.1	0.3	1.9	-0.9
	Compared to control [%]	100.0	102.3	103.1	99.7	98.1	100.9

DAT days after treatment SD Standard deviation CV coefficient of variation
No significant difference between control and treatment

Conclusion

The application of GLOB1911F at rates of 0.063, 0.125, 0.250, 0.500, 1.000 L test item/ha in 200 L water/ha at BBCH stage 12-14 caused no adverse effects on plant survival, phytotoxicity and shoot fresh weight of the six terrestrial plant species wheat (*Triticum aestivum*), onion (*Allium cepa*), lettuce (*Lactuca sativa*), carrot (*Daucus carota*), white mustard (*Sinapis alba*) and tomato (*Lycopersicon esculentum*).

A 2.6.3 KCP 10.6.3 Extended laboratory studies on non-target plants

A 2.7 KCP 10.7 Effects on other terrestrial organisms (flora and fauna)

A 2.8 KCP 10.8 Monitoring data