REGISTRATION REPORT

Part B

Section 3

Efficacy Data and Information

Concise summary

Product code: BAS 762 02 F

Product name(s): Revydas / Brelyco

Chemical active substances:

Mefentrifluconazole, 100 g/L
Boscalid, 200 g/L

Central Zone

Zonal Rapporteur Member State: Poland

CORE ASSESSMENT

Applicant: BASF

Submission date: April 2021

MS Finalisation date: October 2021 (initial Core Assessment)

April 2022 (final Core Assessment)

Version history

When	What
April 2021	Initial dRR – BASF
October 2021	Initial zRMS assessment The report in the dRR format has been prepared by the Applicant, therefore all comments, additional evaluations and conclusions of the zRMS are presented in grey commenting boxes. Minor changes are introduced directly in the text and highlighted in grey. Not agreed or not relevant information are ~~struck through and shaded for transparency~~.
April 2022	Final report (Core Assessment after the commenting period) Additional information/assessments included by the zRMS in the report in response to comments recieved from the cMS and the Applicant are highlighted in yellow, while not agreed use pattern is ~~struck through and shaded~~.

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3 Efficacy Data and Information (including Value Data) on the Plant Protection Product (KCP 6)

Transformation of the dRR (applicant version) into the RR (zRMS version)

Comments of zRMS:

Conclusions from the evaluation were prepared using grey commenting boxes placed at the end of each chapter. Textual changes were done using grey highlights in the text. The parts of the text amended or added by the zRMS evaluator are highlighted in grey, whereas the parts struck off are also ~~visibly marked with the grey font~~.

3.1 Summary and conclusions of zRMS on Section 3: Efficacy (KCP 6)

Abstract

Comments of zRMS:

This application has been submitted for authorization of the fungicide BAS 762 02 F (Revydas / Brelyco) containing 100 g/l mefentrifluconazole (DMI fungicides, FRAC code G1/3)) and 200 g/l boscalid (SDHI fungicides, FRAC code C2/7). The fungicide is intended to be used in oilseed rape to the control of: *Sclerotinia sclerotiorum* (SCLESC), *Alternaria* spp. (ALTESP), *Erysiphe cruciferarum* (ERYSCR), *Neopseudocercosporella brassicae* (MYCOBR); in sunflower to the control of: *Diaporthe helianthi* (DIAPHE), *Plenodomus lindquistii* (LEPTLI), *Sclerotinia sclerotiorum* (SCLESC), *Alternaria helianthi* (ALTEHE) and in wheat to the control of*: Oculimacula yallundae* (PSDCHE), *Zymoseptoria tritici* (SEPTTR) and *Blumeria graminis* (ERYSGR).

Efficacy
The Applicant has submitted 284 efficacy trials from the years 2018-2020, carried out in winter oilseed rape (175 trials), sunflower (84 trials) and winter wheat (25 trials). The trials were conducted in four EPPO zones: Maritime (CZ, DE, DK, FR, SE, UK), North-East (LT, LV, PL), South-East (BG, HU, RO, SK) and Mediterranean (FR).
Based on the submitted efficacy trial results it can be concluded that the fungicide BAS 762 02 F is effective in the control of target pathogens, which are the subject of evaluation. For some uses: ALTESP /oilseed rape/ SE zone; ERYSCR, MYCOBR/ oilseed rape/ MAR zone; DIAPHE, SCLESC, ALTEHE/ sunflower/ MAR zone; ERYSCR/ TRZAW/ MAR, due to not sufficient efficacy data, the decision of acceptance of these pathogens is to be confirmed by individual cMS on the national level according to the national requirements.
No trials results are available for spring oilseed rape and spring wheat in any of the concerned EPPO zones and for sunflower and MYCOBR in winter oilseed rape in NE EPPO zone. The decision of acceptance of these uses is to be made on the national level.
According to the comments received from cMSs the following crops have been finally accepted:

- BRSNS, TRZAS (AT, DE)
- HELAN (AT)

The claimed uses not accepted are as follows:

- BRSNN: MYCOBR (DE)

Phytotoxicity, yield, transformation processes, germination, succeeding crops and adjacent crops
No phytotoxicity and no negative impact on the yield and its quality parameters was observed after application of BAS 762 02 F at dose rate of 1 L/ha in the course of the efficacy trials presented in support of the submission. Based on the submitted trial results or other data it can be also concluded that no adverse effect on transformation processes, seed germination, succeeding crops, adjacent crops is to be expected after application of BAS 762 02 F. Nevertheless, in order to avoid the risk of adverse effects on adjacent crops, being in accordance with the rules of good agricultural practice it is recommended to include, in the product label, the following remark: "*When using BAS 762 02 F do not allow spray drift to the neighbouring crop plantations*".

Resistance management strategy
The zRMS PL has proposed resistance management to be included in the BAS 762 02 F label:
"The fungicide Revydas / Brelyco contains two active substances: mefentrifluconazole from triazole chemical

group (Sterol biosynthesis inhibitors – DMI, FRAC code G1/3) and boscalid from pyridine-carboxamides chemical group (Succinate-dehydrogenase inhibitors – SDHI, FRAC code C2/7). As a part of anti-resistance strategy the number of applications with SDHI and Qol fungicides should be limited. Revydas / Brelyco can be applied only once per growing season in oilseed rape and wheat and maximum two times per growing season in sunflower. Moreover it is recommended to use the fungicide Revydas / Brelyco:
- mainly preventively or at the early stages of disease development
- only at the recommended dose rate, according to the recommendations contained in the product label
- alternately with other fungicides belonging to different chemical groups with different mode of action".

This strategy is to be considered by the cMSs.

Table 3.1-1: Acceptability of intended uses (and respective fall-back GAPs, if applicable)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Use-No. [e]	**Member state(s)**	**Crop and/ or situation (crop destination / purpose of crop)**	**F, Fn, Fpn G, Gn, Gpn or I**	**Pests or Group of pests controlled (additionally: developmental stages of the pest or pest group)**	**Application**				**Application rate**			**PHI (days)**	**Remarks: e.g. g safener/synergist per ha [f]**	**ZRMS conclusion**
					Method / Kind	**Timing / Growth stage of crop & season**	**Max. number a) per use b) per crop/ season**	**Min. interval between applications (days)**	**kg or L product / ha a) max. rate per appl. b) max. total rate per crop/season**	**g or kg as/ha a) max. rate per appl. b) max. total rate per crop/season**	**Water L/ha min / max**			
Zonal uses (field or outdoor uses, certain types of protected crops)														
1	AT, BE, DE, PL, IE	Oilseed Rape, winter and spring (BRSNN)	F	*Sclerotinia sclerotiorum* (SCLESC) *Alternaria* spp. (ALTESP) *Erysiphe cruciferarum* (ERYSCR) *Neopseudocercosporella brassicae* (MYCOBR)	SP	BBCH 57-75	a) 1 b) 1	-	a) 1.0 b) 1.0	a) 100* +200** b) 100* + 200**	100-400	F	F is defined by latest application timing.	A BRSNW: SCLESC, ALTESP, ~~BRSNW:~~ ERYSCR (PL) N BRSNS (PL) possible registration under art. 51; BRSNW: MYCOBR (PL) C BRSNS: SCLESC, ALTESP, ERYSCR, MYCOBR (BE, IE); BRSNW: ERYSCR (AT, BE, DE, IE), MYCOBR (AT, BE, IE) MYCOBR not accepted in DE BRSNS accepted in AT, DE
2	HU, RO, SI, SK	Oilseed Rape, winter and spring (BRSNN)	F	*Sclerotinia sclerotiorum* (SCLESC) *Alternaria* spp. (ALTESP)	SP	BBCH 57-75	a) 1 b) 1	-	a)0.6-1.0 b) 0.6-1.0	a) 60-100* +120-200**	100-400	F	Dose rate range 0.6 - 1.0 L/ha F is defined by latest application timing.	A BRSNW: SCLESC C BRSNS: SCLESC, ALTESP; BRSNW: ALTESP
3	CZ	Oilseed Rape, winter and spring (BRSNN)	F	*Sclerotinia sclerotiorum* (SCLESC) *Alternaria* spp. (ALTESP) *Erysiphe cruciferarum* (ERYSCR) *Neopseudocercosporella brassicae* (MYCOBR)	SP	BBCH 57-75	a) 1 b) 1	-	a) 0.6-1.0 b) 0.6-1.0	a) 60-100* + 120-200**	100-400	F	Dose rate range 0.6 - 1.0 L/ha F is defined by latest application timing.	A BRSNW: SCLESC, ALTESP

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Use-No. [e]	**Member state(s)**	**Crop and/ or situation** **(crop destination / purpose of crop)**	**F, Fn, Fpn G, Gn, Gpn or I**	**Pests or Group of pests controlled** **(additionally: developmental stages of the pest or pest group)**	**Application**				**Application rate**			**PHI (days)**	**Remarks:** **e.g. g safener/synergist per ha [f]**	**ZRMS conclusion**
					Method / Kind	**Timing / Growth stage of crop & season**	**Max. number a) per use b) per crop/ season**	**Min. interval between applications (days)**	**kg or L product / ha a) max. rate per appl. b) max. total rate per crop/season**	**g or kg as/ha** **a) max. rate per appl. b) max. total rate per crop/season**	**Water L/ha** **min / max**			
														C BRSNS: SCLESC, ALTESP, ERYSCR, MY-COBR; BRSNW: ERYSCR, MY-COBR
4	AT, DE, PL	Sunflower (HELAN)	F	*Diaporthe helianthi* (DIAPHE) *Plenodomus lindquistii* (LEPTLI) *Sclerotinia sclerotiorum* (SCLESC) *Alternaria helianthi* (ALTEHE)	SP	BBCH 31-69	a) 2 b) 2	7	a) 1.0 b) 2.0	a) 100* +200** b) 200* + 400**	100-400	F	Maximum 2 applications per crop and season. 1st appl. BBCH 31-59 2nd appl. BBCH 61-69. F is defined by latest application timing.	A ~~LEPTLI~~ (AT)~~DE~~ N (PL) possible registration under art. 51 C DIAPHE, SCLESC, ALTEHE, LEPTLI (DE)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Use-No. [e]	**Member state(s)**	**Crop and/ or situation** **(crop destination / purpose of crop)**	**F, Fn, Fpn G, Gn, Gpn or I**	**Pests or Group of pests controlled** **(additionally: developmental stages of the pest or pest group)**	**Application**				**Application rate**			**PHI (days)**	**Remarks:** **e.g. g safener/synergist per ha [f]**	**ZRMS conclusion**
					Method / Kind	**Timing / Growth stage of crop & season**	**Max. number a) per use b) per crop/ season**	**Min. interval between applications (days)**	**kg or L product / ha a) max. rate per appl. b) max. total rate per crop/season**	**g or kg as/ha** **a) max. rate per appl. b) max. total rate per crop/season**	**Water L/ha** **min / max**			
5	HU, RO, SI, SK, ~~CZ~~	Sunflower (HELAN)	F	*Diaporthe helianthi* (DIAPHE) *Plenodomus lindquistii* (LEPTLI) *Sclerotinia sclerotiorum* (SCLESC) *Alternaria helianthi* (ALTEHE)	SP	BBCH 31-69	a) 2 b) 2	7	a)0.6 – 1.0 b)1.2 - 2.0	a) 60-100* +120-200** b) 120-200* + 240-400**	100-400	F	Maximum 2 applications per crop and season. Dose rate range 0.6 - 1.0 L/ha 1st appl. BBCH 31-59 2nd appl. BBCH 61-69. F is defined by latest application timing.	A
6	CZ	Sunflower (HELAN)	F	*Diaporthe helianthi* (DIAPHE) *Plenodomus lindquistii* (LEPTLI) *Sclerotinia sclerotiorum* (SCLESC) *Alternaria helianthi* (ALTEHE)	SP	BBCH 31-69	a) 1 b) 1	-	a) 0.6-1.0 b) 0.6-1.0	a) 60-100* +120-200**	100-400	F	Dose rate range 0.6 - 1.0 L/ha	A LEPTLI C DIAPHE, SCLESC, ALTEHE
7	DE; AT	Wheat, (winter and spring) (TRZAW, TRZAS)	F	*Oculimacula yallundae* ~~spp~~ - PSDCHE *Septoria tritici* - SEPTTR *Blumeria graminis* - ERYSGR	SP	BBCH 30 -49	a) 1 b) 1	-	a) 1.0 b) 1.0	a) 100* +200** b) 100* + 200**	100 - 300	56	For eyespot control, only one application at BBCH 30-32	A TRZAW: PSDCHE, SEPTTR C ~~TRZAS: PSDCHE, SEPTTR, ERYSCR;~~ TRZAW: ERYSCR TRZAS accepted in AT, DE; ERYSCR to be confirmed
8	CZ	Wheat, (winter and spring) (TRZAW, TRZAS)	F	*Oculimacula yallundae* ~~spp~~ - PSDCHE *Septoria tritici* - SEPTTR *Blumeria graminis* - ERYSGR	SP	BBCH 30 -49	a) 1 b) 1	-	a) 0.6-1.0 b) 0.6-1.0	a) 60-100* +120-200**	100 - 300	56	Dose rate range 0.6 - 1.0 L/ha For eyespot control, only one application at BBCH 30-32	A TRZAW: PSDCHE, SEPTTR C TRZAS: PSDCHE, SEPTTR, ERYSCR; TRZAW: ERYSCR
~~8~~ 9	PL	Wheat, (winter and spring) (TRZAW, TRZAS)	F	*Oculimacula yallundae* ~~spp~~ - PSDCHE *Septoria tritici* - SEPTTR *Blumeria graminis* - ERYSGR	SP	BBCH 30 -49	a) 1 b) 1	-	a) 1.0 b) 1.0	a) 100* +200** b) 100* + 200**	100 - 300	56	For eyespot control, only one application at BBCH 30-32	A TRZAW N TRZAS

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

* 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

Column 15: zRMS conclusion.

A	Acceptable
R	Acceptable with further restriction
C	To be confirmed by cMS
N	Not acceptable / evaluation not possible

3.2 Efficacy data (KCP 6)

Introduction

This ~~biological assessment dossier~~ Draft Registration Report summarizes the biological activity of the plant protection product BAS 762 02 F containing the active substances mefentrifluconazole (100 g/L) and boscalid (200 g/L). Mefentrifluconazole is a new active ingredient that comes from the BASF research. BAS 762 02 F as a combination of mefentrifluconazole and boscalid is a powerful fungicide product for the control of *Sclerotinia sclerotiorum*, *Alternaria* species, *Erysiphe cruciferarum* and *Neopseudocercosporella brassicae* in oilseed rape, *Diaporthe helianthi*, *Plenodomus lindquistii*, *Sclerotinia sclerotiorum* and *Alternaria helianthi* in sunflower and *Oculimacula yallundae*, *Zymoseptoria tritici* and *Blumeria graminis* in wheat.

This core ~~Biological Assessment Dossier~~ Draft Registration Report contains all information necessary for the efficacy evaluation of BAS 762 02 F in the following countries in the Central zone: Austria, Belgium, the Czech Republic, Germany, Hungary, Ireland, Poland, Romania, Slovenia and Slovakia. The zonal rapporteur member state is Poland. A separate submission will be done in the United Kingdom.

Description of active substances

BAS 762 02 F is a foliar fungicide plant protection product containing two active substances: mefentrifluconazole (100 g/L) and boscalid (200 g/L).

Boscalid is well known active ingredient that has already been registered in many European countries on many crops since years. Boscalid displays an excellent activity against a broad range of diseases.

Mefentrifluconazole is a new active ingredient with preventive and curative properties, that was developed for use against a wide range of diseases in a wide range of crops. The dossiers for registrations of mefentrifluconazole solo or in co-formulations with other products have been submitted and evaluations are ongoing.

Mode of action

Boscalid is a fungicide active ingredient belonging to the pyridine-carboxamides group (also known as carboxins or oxathiins, group FRAC C2, code 7). The mode of action of boscalid is the inhibition of the enzyme succinate dehydrogenase (SDHI), also known as complex II in the mitochondrial electron transport chain. Like other complexes of the respiratory chain, this enzyme is a component of the inner mitochondrial membrane. It consists of four nucleus-encoded subunits (SDH A, B, C, D). Two of these polypeptides (SDH C, D) anchor the complex in the membrane whilst the others project into the mitochondrial matrix where they catalyse the oxidation of succinate to fumarate as part of the tricarboxylic acid (TCA) cycle. The electrons so released are channelled into the electron transport chain via the co-substrate ubiquinol. Complex II occupies a key function in fungal metabolism. Not only does it deliver high energy electrons for energy production, it also forms an essential junction where components of the TCA cycle can be diverted to become the building blocks for amino acids and lipids. Through its inhibition of complex II, boscalid disrupts fungal growth by preventing energy production and also by eliminating the availability of the chemical building blocks for the synthesis of other essential cellular components.

According to the mode of action classification of the Fungicide Resistance Action Committee (FRAC), **mefentrifluconazole** is a fungicide belonging to the group of the sterol biosynthesis inhibitors (SBI, mode of action class G). Within the SBIs, it belongs to the subgroup of demethylation inhibitor (DMI, G1, FRAC code 3) and the chemical group of triazoles.

The primary mode of action of DMIs is the blocking of ergosterol biosynthesis through inhibition of cytochrome P450 sterol 14a-demethylase (CYP51). The depletion of ergosterol and accumulation of non-functional 14a-methyl sterols results in inhibition of growth and cell membrane disruption.

Mefentrifluconazole (BAS 750 F) is active against different fungal stages both on the plant surface and in the plant tissue. Since the vapour pressure of mefentrifluconazole is very low, a gas phase activity was not observed.

Table 3.2-1: Details of the active substances

Active substance	**mefentrifluconazole**	**boscalid**
Concentration	100 g/L	200 g/L
Group	C14 - demethylation inhibitor (DMI)	complex II: succinate dehydrogenase inhibitors (SDHI)
Subgroup	triazoles	pyridine-carboxamides
Mode of action	inhibition of sterol biosynthesis in membranes	inhibition of respiration
Biological action	fungicide with preventive and curative properties	fungicide with preventative and curative properties

Description of the plant protection product

BAS 762 02 F is formulated as a suspension concentrate (SC) containing 100 g/L ~~of~~ mefentrifluconazole and 200 g/L ~~of~~ boscalid for use in oilseed rape, sunflower and ~~cereals~~ wheat.

The association of mefentrifluconazole and boscalid brings advantage of 2 different modes of action in one product.

Use pattern

BAS 762 02 F is intended for treatment with 1 L of product per ha in oilseed rape, sunflower and wheat. The maximum number of applications in oilseed rape (between GS 57-75) and wheat (between GS 30-49) is 1, in sunflower (between GS 31-69) are 2 applications per season.

Table 3.2-2: Simplified table of currently registered uses and requested uses for BAS 762 02 F

Uses		**Member State**			**Requested rate(s)**	**Comments / Other relevant details on GAPs**
Crop(s)	**Target(s)**	**MA EPPO Zone**	**NE EPPO Zone**	**SE EPPO Zone**		
Oilseed rape winter and spring	*Sclerotinia sclerotiorum*	AT, BE, CZ, DE, IE	PL	HU, RO, SK, SI	1 L/ha	For CZ, HU, RO, SK, SI: Dose rate range of 0,6-1 L/ha
	Alternaria species	AT, BE, CZ, DE, IE	PL	HU, RO, SK, SI	1 L/ha	For CZ, HU, RO, SK, SI: Dose rate range of 0,6-1 L/ha
	Erysiphe cruciferarum	AT, BE, CZ, DE, IE	PL		1 L/ha	For CZ: Dose rate range of 0,6-1 L/ha
	Neopseudocercosporella brassicae	AT, BE, CZ, DE, IE	PL		1 L/ha	For CZ: Dose rate range of 0,6-1 L/ha
Sunflower	*Sclerotinia sclerotiorum*	AT, CZ, DE	PL	HU, RO, SK, SI	1 L/ha	For CZ, HU, RO, SK, SI: dose rate range of 0,6-1 L/ha For DE, PL: minor use
	Alternaria helianthi	AT, CZ, DE	PL	HU, RO, SK, SI	1 L/ha	For CZ, HU, RO, SK, SI: dose rate range of 0,6-1 L/ha For DE, PL: minor use
	Plenodomus lindquistii	AT, CZ, DE	PL	HU, RO, SK, SI	1 L/ha	For CZ, HU, RO, SK, SI: dose rate range of 0,6-1 L/ha For DE, PL: minor use
	Diaporthe helianthi	AT, CZ, DE	PL	HU, RO, SK, SI	1 L/ha	For CZ, HU, RO, SK, SI: dose rate range of 0,6-1 L/ha For DE, PL: minor use
Wheat	*Oculimacula yallundae* ~~species~~	AT, CZ, DE	PL	-	1 L/ha	For CZ: Dose rate range of 0,6-1 L/ha
	Zymoseptoria tritici	AT, CZ, DE	PL	-	1 L/ha	For CZ: Dose rate range of

Uses		Member State			Requested rate(s)	Comments / Other relevant details on GAPs
Crop(s)	Target(s)	MA EPPO Zone	NE EPPO Zone	SE EPPO Zone		
						0,6-1 L/ha
	Blumeria graminis	AT, CZ, DE	PL	-	1 L/ha	For CZ: Dose rate range of 0,6-1 L/ha

Further details are in the table "All intended uses" in Part B - Section 0.

Description of the target pests

Table 3.2-3: Glossary of pests mentioned in the dossier

EPPO code	Scientific name	English name
ALTEBA	*Alternaria brassicae*	black spot of rape
ALTEHE	*Alternaria helianthi*	blight of sunflower
ALTESP	*Alternaria* species	-
DIAPHE	*Diaporthe helianthi*	stalk rot (stem canker) of sunflower
ERYSCR	*Erysiphe cruciferarum*	powdery mildew of crucifers
ERYSGR	*Blumeria graminis*	powdery mildew of cereals
ERYSGT	*Blumeria graminis f. sp. tritici*	powdery mildew of wheat
LEPTLI	*Plenodomus lindquistii (Leptosphaeria lindquistii)*	black stem (girdling) of sunflower
MYCOBR	*Neopseudocercosporella brassicae*	ring spot
OLIMSP	*Oculimacula* species	-
~~PSDCHA~~	~~*Oculimacula acuformis*~~	~~eyespot of cereals (R-type)~~
PSDCHE	*Oculimacula yallundae* (*Pseudocercosporella herpotrichoides, W* type)	eyespot of cereals (W-type)
SEPTTR	*Zymoseptoria tritici*	*Septoria* leaf blotch (leaf spot)
SCLESC	*Sclerotinia sclerotiorum*	stem rot

~~* optional~~

Table 3.2-4: Major / minor status of intended uses (for all cMS and zRMS).

Crop	Crop status		Pests or group of pests	Pest Status	
	major	minor	controlled	major	minor
Oilseed rape (BRSNN)	AT, BE, CZ, DE, HU, PL (BRSNW), SI, SK (BRSNW)	IE,PL (BRSNS), SK (BRSNS)	SCLESC	AT, BE, CZ, DE, PL, SI, SK, HU	IE
			ALTESP	AT, BE, DE, IE, PL, SI, SK, HU	IE, CZ
			ERYSCR	AT, BE, DE, PL	IE, CZ, HU
			MYCOBR	AT, BE, DE, PL	IE, CZ, HU
Sunflower (HELAN)	AT, CZ, HU, SI, SK	DE, PL	DIAPHE	AT, SI, SK, PL, HU	CZ, DE, ~~PL~~
			SCLESC	AT, CZ, SI, SK, PL, HU	DE, ~~PL~~
			LEPTLI	AT, CZ, SI, SK, HU	DE, PL
			ALTEHE	AT, CZ, SI, SK, HU	DE, PL
Wheat	AT, CZ, DE, PL	-	OLIMSP	AT, CZ, DE, PL	-
			SEPTTR	AT, CZ, DE, PL	-
			ERYSGR	AT, CZ, DE, PL	-

Compliance with the Uniform Principles

All trials were conducted in compliance with relevant EPPO guidelines as listed in relevant overview tables with trial methodology: Table 3.2-11,

Table 3.2-12 and

Table 3.2-13.

Besides, efficacy trials carried out in France followed the trial method recommendations published by "Commission des Essais Biologiques (CEB)" as well.

The field trials presented in this ~~BAD~~ dRR were performed by BASF or officially recognized testing organizations. All trials followed GEP principles and all testing organizations had the appropriate GEP certificate – see chapter 3.7.

Information on trials submitted (3.1 Efficacy data)

~~A~~ Results from a total of ~~271~~ **284 efficacy trials** have been ~~included~~ presented in this ~~BAD~~ dRR to demonstrate the efficacy and selectivity of BAS 762 02 F as well as to justify the minimum effective dose~~, as well as to demonstrate the efficacy and selectivity of BAS 762 02 F~~ when used on oilseed rape, sunflower and wheat. Trials were conducted between 2018 and 2020 in countries belonging to the different EPPO climatic zones, namely: Maritime, North East, South East and Mediterranean zone~~s~~.

Altogether ~~69~~ **74 efficacy trials without disease** or with very low disease pressure are presented ~~in this BAD~~ in order to prove absence of adverse effects.

Overview of submitted trials per crop and application timing is provided in the tables below.

Table 3.2-5: Presentation of trials, Oilseed Rape, Efficacy trials with disease

Crop	Country	Type of trial*	Number of trials per zone				Years	GEP, non-GEP, official**
			Maritime	North East	South East	Mediterranean		
Oilseed rape	Czech Republic	MED + E	17				2018-2019	GEP
		E	~~5~~ 7				2018-~~2019~~ 2020	GEP
	Denmark	E	1				~~2019~~ 2020	GEP
	France	MED + E	4				2018-2019	GEP
		E	~~12~~ 14			4	2018-~~2019~~ 2020	GEP
	Germany	MED + E	1				2019	GEP
		E	~~4~~ 8				2019-2020	GEP
	Hungary	MED + E			4		2018-2019	GEP
		E			3		2018-2019	GEP
	Latvia	E		~~5~~ 2			~~2018~~ 2019 - 2020	GEP
	Lithuania	E		1			2018	GEP
	Poland	MED + E		11			2018-2019	GEP
		E		~~6~~ 8			2018-~~2019~~ 2020	GEP
	Romania	MED + E			9		2018-2019	GEP
		E			5		2018-2019	GEP
	Slovakia	MED + E			6		2018-2019	GEP
		E			~~3~~ 4		2018-~~2019~~ 2020	GEP
	Sweden	E	1				2019	GEP
TOTAL 1			~~45~~ **53**	~~23~~ **22**	~~30~~ **31**	**4**	-	-
TOTAL 2			~~102~~ **110**				-	-

* MED = minimum effective dose, E = efficacy trial
** Official: carried out by a national official organisation

Table 3.2-6: Presentation of trials, Oilseed Rape, Efficacy trials without disease

Crop	Country	Type of trial*	Number of trials per zone			Years	GEP, non-GEP, official**
			Maritime	North East	South East		
Oilseed rape	Czech Republic	Y + Q	1			2018	GEP
		Y + Q + P	1			2018	GEP
	Denmark	Y + Q	~~5~~ 6			2018-2019	GEP
	France	Y + Q	~~13~~ 11			2018-2019	GEP
		Y + Q + P	~~3~~ 5			2019	GEP
	Germany	Y + Q	11			2018-2019	GEP
		Y + Q + P	1			2019	GEP
	Hungary	Y + Q			3	2018-2019	GEP
	Latvia	Y + Q		~~1~~ 5		2018-2019	GEP
	Poland	Y + Q		8		2018-2019	GEP
		Y + Q + P		2		2018	GEP
	Romania	Y + Q			2	2019	GEP
	Slovakia	Y + Q			~~1~~ 4	2018-2019	GEP
		Y + Q + P			~~4~~ 1	2018 ~~2019~~	GEP
	Sweden	Y + Q	1			2019	GEP
	United Kingdom	Y + Q	3			2018-2019	GEP
TOTAL 1			~~39~~ **40**	~~11~~ **15**	**10**	-	-
TOTAL 2			~~60~~ **65**			-	-

* Y = trial with yield assessment, Q = trial with quality assessment, P = trial with assessment of impact on propagation
** Official: carried out by a national official organisation

Table 3.2-7: Presentation of trials, Sunflower, Efficacy trials with disease

Crop	Country	Type of trial*	Number of trials per zone		Years	GEP, non-GEP, official**
			Maritime	South East		
Sunflower	Bulgaria	E		2	2018	GEP
		MED + E		6	2018-2019	GEP
	Czech Republic	E	2		2018	GEP
		MED + E	1		2018	GEP
		MED + E	3		2019	GEP
		E	2		2020	GEP
	France	E	1		2018	GEP
		MED + E	5		2018-2019	GEP
	Hungary	MED + E		9	2018-2019	GEP
		E		3	2018, ~~2019~~ 2020	GEP
	Romania	MED + E		13	2018-2019	GEP
		E		4	2018, 2020	GEP
	Slovakia	MED + E		17	2018-2019	GEP
		E		8	2018, 2020	GEP
TOTAL 1			**14**	**62**	-	-
TOTAL 2			**76**		-	-

* MED = minimum effective dose, E = efficacy trial
** Official: carried out by a national official organisation

Table 3.2-8: Presentation of trials, Sunflower, Efficacy trials without disease

Crop	Country	Type of trial*	Number of trials per zone		Years	GEP, non-GEP, official**
			Maritime	South East		
Sunflower	France	Y + Q + P	1		2019	GEP
		Y + Q	2		2018-2019	GEP
	Hungary	Y + Q + P		3	2018	GEP
		Y + Q		2	2018	GEP
TOTAL 1			**3**	**5**	-	-
TOTAL 2			**8**		-	-

* Y = trial with yield assessment, Q = trial with quality assessment, P = trial with assessment of impact on propagation
** Official: carried out by a national official organisation

Table 3.2-9: Presentation of trials, Wheat, Efficacy trials with disease

Crop	Country	Type of trial*	Number of trials per zone		Years	GEP, non-GEP, official**
			Maritime	North East		
Wheat	Czech Republic	MED + E	3		2018-2019	GEP
	Denmark	MED + E	1		2018	GEP
	France	MED + E	2		2018	GEP
	Germany	MED + E	~~4~~ 5		2018-2019	GEP
		~~E~~	~~1~~		~~2018~~	
	Latvia	MED + E	1		2018	GEP
	Lithuania	E	1		2019	GEP
	Poland	MED + E	~~8~~ 9		2018-2019	GEP
		~~E~~	~~1~~		~~2019~~	~~GEP~~
	United Kingdom	MED + E	2		2018, 2020	GEP
TOTAL 1			**24**	**0**	-	-
TOTAL 2			**24**		-	-

* MED = minimum effective dose, E = efficacy trial
** Official: carried out by a national official organisation

Table 3.2-10: Presentation of trials, Wheat, Efficacy trials without disease

Crop	Country	Type of trial*	Number of trials per zone		Years	GEP, non-GEP, official**
			Maritime	North East		
Wheat	Latvia	Y + Q		1	2018	GEP
TOTAL 1			**0**	**1**	-	-
TOTAL 2			**1**		-	-

* Y = trial with yield assessment, Q = trial with quality assessment, P = trial with assessment of impact on propagation
** Official: carried out by a national official organisation

Table 3.2-11: Details on trial methodology, Oilseed Rape

Details on trial methodology		
Guidelines	General	EPPO PP 1/135 (4): Phytotoxicity assessment EPPO PP 1/152 (4): Design and analysis of efficacy evaluation trials EPPO PP 1/181 (4): Conduct and reporting of efficacy evaluation trials including good experimental practice
	Specific	EPPO PP 1/078(3) Root, stem, foliar and pod diseases of oilseed rape
Experimental design	Plot design	Randomised blocks (RB)
	Plot size	efficacy trials with disease 18,48 - 48 m^2 efficacy trials without disease 16 - 50 m^2
	Number of replications	4
Crop	Trials per crop	~~102~~ 110 efficacy trials with disease ~~60~~ 65 efficacy trials without disease
	Varieties per crop	84 varieties: ABAKUS (1), AC 736 (1), ALASCO (1), ALICANTE (2), ALPAGA (1), ANDERSON (1), ANNAPOLIS (1), ARCHITECT (7), ARIZONA (1), ARSENAL (3), ASTRONOM (1), ATTLETICK (2), AVATAR (2), BIRDY (1), BLUESTAR (2), BOGART (2), BUTTERFLY (2), CAMPUS (1), CONRAD CL (3), CORTES (1), CRISTIANO KWS (1), CUZZCO (1), DALTON (1), DK EXCELLIUM (1), DK EXCEPTION (9), DK EXEPTION (1), DK EXLIBRIS (4), DK EXPANSION (2), DK EXPRESSION (2), DK EXPRIT (1), DK EXSTORM (1), DK EXTENSO (1), DK EXTRACT (2), DK IMISTAR (1), DK IMMINENT (1), DK IMPRESSION C (1), DK INSPIRATION (1), DK SEGUEL (1), ES ASTRID (1), ES IMPERIO (1), ES MAMBO (1), ES MONACO (1), ES VALEGRO (1), EXCEPTION (1), EXCLAIM (1), EXSTORM (2), FERNANDO (1), GRAF (1), HYBRIROCK (6), IVAN 106 (6), KADORE (2), KWS UMBERTO (3), LORENZ (6), MANITOBA (1), MANZANA (1), MELANGE 3V (1), MEMORI CS (1), MENHIR (2), MENTOR (1), MERCEDES (1), ODEON (1), PAMELA (1), PANAMA F1 (1), PHOENIX (1), PICTO (1), POZNANIAK (3), PR44D06 (4), PR44W29 (5), PR46W20 (4), PT225 (2), PT228 (3), PT240 (1), PX 125 CL (1), ROCCA (1), ROHAN (1), SHERPA (1), SHIELD (1), STARTER (1), SY ALIBABA (4), SY ALISTOR (1), TREZZOR (1), VERITAS (1), VISBY (7), ZAKARI CS (5)
	Sowing period	efficacy trials with disease ~~10 AUG~~ 25 JUL - ~~8~~ 26 SEP efficacy trials without disease 15 AUG - 14 SEP
Application	Crop stage (BBCH) at application	efficacy trials with disease BBCH ~~55~~ 31-75 efficacy trials without disease BBCH ~~61~~ 36 - ~~67~~ 75
	Number of applications	1
	Spray volumes	efficacy trials with disease 150 - 400 L/ha efficacy trials without disease 135 – 300 L/ha
Assessment	Assessment types	Disease severity (%) P%INF/BEFWER Disease incidence (%) P%FREQ/BEFHKT Phytotoxicity (%) PHYTOX Yield (dt/ha) ERTRNE Thousand grain weight (g) TAUKOG Oil content (%) OLGEHA
Other relevant information		See site details report in Appendix 4

Table 3.2-12: Details on trial methodology, Sunflower

Details on trial methodology		
Guidelines	General	EPPO PP 1/135 (4): Phytotoxicity assessment EPPO PP 1/152 (4): Design and Analysis of Efficacy Evaluation Trials EPPO PP 1/181 (4): Conduct and reporting of efficacy evaluation trials including good experimental practice
	Specific	N/A
Experimental design	Plot design	Randomised blocks (RB)
	Plot size	efficacy trials with disease 20,01 - 42 m^2 efficacy trials without disease 21 – 30 m^2
	Number of replications	4
Crop	Trials per crop	76 efficacy trials with disease 8 efficacy trials without disease
	Varieties per crop	38 varieties: ACCORDIS CLP (1), BACARDI (5), CLLIF (3), CLLUB (2), ES BELLA (2), ES IDILLIC (1), ES UNIC (1), EXPERTO HO (2), FAUSTO ST (3), FD15E27 (1), HOLERON (1), IMIDOR (1), LG 50.635 (1), LG 5478 (2), LG 5492 HO CL (1), LG 56.58 CL (3), LG 5633 CL (1), MARQUESA (2), NEOSTAR (7), NK BRIO (5), NK NEOMA (2), P 64 LE 25 (1), P37N01 (1), P63LE10 (1), P63LE113 (1), P64LE99 (5), P64BB01 (3), P64HE01 (1), P64HE118 (1), P64LE25 (14), P64LP 130 (2), PARAISO 102 CL (1), RGT BUFFALLO (1), SUBARO HTS (1), SY RIALTO (1), SY VALEO (1), TRANSOL (1), VELLOX (1)
	Sowing period	efficacy trials with disease 22 MAR - 21 JUN efficacy trials without disease 10 APR - 26 APR
Application	Crop stage (BBCH) at application	efficacy trials with disease BBCH 31 - 69 efficacy trials without disease BBCH 35 - 65
	Number of application	1-2
	Intervals between applications	~~17~~ 15 – 59 days
	Spray volumes	180-400 L/ha
Assessment	Assessment types	Disease severity (%) P%INF Disease incidence (%) P%FREQ Stem breaking of sunflower(%) YKNIHA Breaking of sunflower heads (%) YKNIAE Green leaf tissue (%) GREENT Phytotoxicity (%) PHYTOX Yield (dt/ha) ERTRNE Thousand grain weight (g) TAUKOG Oil content (%) OLGEHA
Other relevant information		See site details report in Appendix 4

Table 3.2-13: Details on trial methodology, Wheat

Details on trial methodology		
Guidelines	General	EPPO PP 1/135 (4): Phytotoxicity assessment EPPO PP 1/152 (4): Design and analysis of efficacy evaluation trials EPPO PP 1/181 (4): Conduct and reporting of efficacy evaluation trials including good experimental practice EPPO PP 1-223 (2) Introduction to the efficacy evaluation of plant protection products EPPO PP 1/239 (2): Dose expression for plant protection products
	Specific	EPPO PP1/026 (4) Foliar and ear diseases on cereals EPPO PP1/028 (3) Eyespot of cereals
Experimental design	Plot design	Randomised blocks (RB)
	Plot size	efficacy trials with disease 10,5 – 38,4 m^2 efficacy trials without disease 33 m^2
	Number of replications	4
Crop	Trials per crop	efficacy trials with disease 24 efficacy trials without disease 1
	Varieties per crop	17 varieties: ARKADIA (2), BOHEMIA (1), DICHTER (1), DINOSOR (2), EDVINS (1), ETANA (2), HONDIA (2), JB ASANO (1), KWS SISKIN (2), MONOPOL (3), PANKRATZ (1), PATRAS (1), PRINCEPS (1), SKAGEN (1), TOBAK (2), TORP (1), ZEPPELIN (1)
	Sowing period	efficacy trials with disease 18 SEP – 25 OCT efficacy trials without disease 30 SEP
Application	Crop stage (BBCH) at application	efficacy trials with disease BBCH 30-32 efficacy trials without disease BBCH 31-32
	Number of applications	1
	Spray volumes	efficacy trials with disease 160-300 L/ha efficacy trials without disease 200 L/ha
Assessments	Assessment types	Disease severity (%) P%INF/BEFWER Disease incidence (%) P%FREQ/BEFHKT Phytotoxicity (%) PHYTOX Yield (dt/ha) ERTRNE Thousand grain weight (g) TAUKOG Hectolitre weight (kg) HEKLIT
Other relevant information		See site details report in Appendix 4

Trial layout

Untreated plots were included in the trial layout.
The trial sites were chosen according to the disease presence or its probability to appear on a disease sensitive variety. The locations of the trials were chosen to present the performance of the product and its crop safety profile across requested climatic zones.

Application

Applications were carried out according to the GAP, mostly preventatively. All treatments with the exception of untreated controls were treated in the same way by plot sprayers. It is considered that the quality and quantity of product applied to the plant by the plot sprayers is representative of that achieved with commercial machinery. The nozzle types used were representative of the range occurring in commercial practice. For more details see the corresponding Site details report in Appendix 4 or the Dossier Trial Data Report.

Assessments

Diseases were assessed according to the percentage of infestation. This infestation can be expressed as the intensity of attack (=severity) and the frequency of attack regardless of the severity.

Within the trial set, 2 ways of assessment were used:

1. **Visual assessment**:
   - P%INF: intensity of attack is obtained as a visual estimation of the percentage coverage of each plant part area (leaves, stems or pods)
   - P%FREQ: frequency of attack represented by the number of attacked plant part. This number is expressed in percentage of the sampling.

2. **Class assessment** (H 1-4 or A1-2)

   The level of the attack (intensity and frequency) is evaluated and calculated by classing plants into different severity categories ranging from no disease to severe attack.
   - BEFHKT: frequency of disease attack expressed in percentage (%), considering 4 damage classes (for example: 6 classes that indicate the percentage of infected area of the leaves)
   - BEFWER: intensity of attack expressed in percentage (%), considering 4 damage classes.

   The 4 damage classes are defined as follows:
   Category 1: No disease
   Category 2: Low attack level (beginning of the disease)
   Category 3: Intermediate attack
   Category 4: Severe attack

   From this class assessment, the intensity of attack BEFWER and the frequency of attack BEFHKT were calculated as follows:

BEFHKT (% Frequency of attack)

Frequency of attack:

$$BEFHKT = \frac{cl_2 + cl_3 + cl_4}{\text{total } (cl_1 \text{ to } cl_4)} \times 100$$

BEFWER (% intensity of attack)

BEFWER = (((Cl 1 x 0) + (Cl 2 x 1) + (Cl 3 x 2) + (Cl 4 x 3)) / 3 x N) x 100
Calculation according to Townsend-Heuberger
Intensity of attack (0-100 %)

This dossier focuses on evaluation of the intensity of attack. Both variables P%INF and BEFWER are considered comparable and are therefore summarized together in data tables. The information on the frequency of attack can be found in the dossier trial data reports.

Crop selectivity was assessed visually at various intervals after application as the percentage relative to untreated plots. It was measured on a scale of phytotoxicity (%), 0 to 100.

Most of the trials were harvested. Grain yield from a known harvested area was adjusted to a fixed moisture level (according to the national standard) and expressed as decitonnes per hectare (dt/ha). Relative yield (% untreated) was calculated. Other yield parameters such as thousand grain weight, hectolitre weight and oil content were measured (depending on the crop).

In sunflower, parameters as green leaf tissue, stem breaking and broken heads were assessed.

Green leaf tissue (GREENT) represents the leaf surface still capable of assimilation. On samples chosen at random within a plot, the green leaf surface of the entire plant is estimated in percent. The variable was assessed in sunflower and maize.

Stem breaking (YKNIHA) means that the lower part of the plants still stands upright and the haulm is broken or cracked at an upper part of the plant. A visual estimation of the percentage of broken stems due to stem diseases within each plot is given.

0% = without broken stems within a plot
100% = all stems broken within a plot

Head breaking (YKNIAE) assessment represents estimation of the percentage of snapped stems near the flower head per plot.

0% = without snapped stems
100% = all stems snapped near the flower head within each plot

Statistical analysis

The observed or calculated variables of yield and quality were subjected to an analysis of variance (ANOVA). When the result of the analysis was significant, a multiple comparison of treatments was performed by **Tukey-Test without transformation of data**.

The statistical tests show which treatments are different with a 95% probability. The averages are divided into homogeneous groups (A, B, C …). Statistically significant difference exists, if the letters beside the results for two treatments are different. Values followed by the same letter are not significantly different ($P<0.05$).

Results layout

In the efficacy section of the BAD, data is split by target diseases. In each efficacy table, percentage control in relation to the untreated plot is presented. For each trial results table, a data summary is provided with the number of trials presented, the average, minimum and maximum values. The results are sorted by EPPO zones.
For treated plots, a relative percentage of efficacy is calculated using the Abbott formula. All values are rounded to one decimal place

$$\text{Abbott formula: } ABB = \frac{C - T}{C} \times 100$$

C = infection degree in the untreated object
T = infection degree in the treated object

Only trials and assessments with sufficient infestation level in the untreated plot are considered for evaluation. The **mean threshold** considered in this dossier is ~~usually~~ **5%** of intensity of attack for diseases of the field crops unless stated differently.

Phytotoxicity, quality and yield data are presented separately from efficacy trials with disease and from efficacy trials without disease or with infection in the untreated plots below the defined threshold.

Reference products

A range of commercially registered fungicides was used as standards. The standards were applied as per locally approved label rates. In each trial the tested product was compared to at least 1 reference product. An overview of reference products used in the efficacy trials is given in Table 3.2-14.

Table 3.2-14: Presentation of reference standards used in efficacy trials

Crop	Reference standard	Countries where the product is registered	Authorization number	Trade name(s)	Active substance(s)	Formulation		Reg, applic, rate in countries (L/ha)	Applic, rate in trials per treatment (L/ha)
						Type	Conc, of a,s, (g/L)		
Oilseed rape	BAS 9488 0 F	Austria	3371/0	Propulse	fluopyram + prothioconazole	SE	125 + 125	1	1
		Belgium	10245P/B					1	
		Czech Republic	4912-1					0,8-1	
		Germany	027208-00					1	
		Hungary	~~01496~~ 04.2/1696-1/2017					1	
		Ireland	05870					1	
		Netherlands	15730					1	
		Poland	R-231/2017	Propulse 250 SE				1	
		Romania	041PC					1	
		Slovakia	14-02-1436	Propulse				0,8-1	
		Slovenia	U34330-48/19/1					1	
		United Kingdom	17837					1	
Sunflower	BAS 9488 0 F	Austria	3371/0	Propulse	fluopyram + prothioconazole	SE	125 + 125	1	1
		Czech Republic	4912-1	Propulse				0,8-1	
		Hungary	~~02159~~ 04.2/1696-1/2017	Propulse				0,8-1	
		Poland	R-231/2017	Propulse 250 SE				1	
		Romania	041PC					0,8-1	
		Slovakia	14-02-1436	Propulse				0,8-1	
		Slovenia	U34330-48/19/1	Propulse				0,8-1	
Wheat	BAS 9314 1 F	Austria	3771/0	Proline EC	prothioconazole	EC	250	0,8	0,8
		Czech Republic	4523-1	Proline 250 EC				0,8	
		Denmark	18-473/72200	Proline 250 EC				0,4-0,8	
		France	2060116	Joao				0,8	
		Germany	025287-00	Proline				0,8	
		Latvia	637 655	Proline Curbatur				0,6-0,8	
		Lithuania	AS2-6F(2018) AS2-80F(2018)	Proline Curbatur				0,8	
	BAS 9314 4 F	United Kingdom	14790	Proline 275			275	0,72	0,72-0,73
	BAS 560 00 F	Austria	3974/0	Flexity	metrafenone	SC	300	0,5	0,5
		Czech Republic	5627-0	Flexity				0,5	
		Denmark	19-166/70163	Flexity				0,25-0,5	
		France	2060051	Flexity Kalys				0,5	
		Germany	025311-00	Flexity				0,5	
		Latvia	265	Flexity				0,5	
		Lithuania	AS2-50F(2019)	Flexity				0,5	
		Poland	R-93/2009	Flexity 300 SC				0,5	
		United Kingdom	11775 11917	Flexity Attenzo				0,5	

3.2.1 Preliminary tests (KCP 6.1)

Ratio and Co-formulation justification

Rationale for the co-formulation BAS 762 02 F

BAS 762 02 F consists of mefentrifluconazole and boscalid.

Mefentrifluconazole is a novel demethylase-inhibitor fungicide ("DMI", FRAC code G1) with excellent activity against *Sclerotinia sclerotiorum*, *Alternaria* species in oilseed rape and sunflower, *Diaporthe helianthi* and *Phoma macdonaldii* in sunflower and *Septoria* leaf blotch in wheat.

Boscalid is a member of the fungicide group succinate dehydrogenase inhibitors (SDHI, mode of action class C2) and the mode of action of boscalid at the molecular level is the inhibition of the enzyme succinate dehydrogenase (SDH), also known as complex II in the mitochondrial electron transport chain (Kulka and von Schmeling 1995). The active is known for its efficacy on a range of diseases in sunflower and oilseed rape such as *Sclerotinia sclerotiorum*, *Alternaria* species, *Diaporthe helianthi* and *Phoma macdonaldii*, as well as for the excellent efficacy against eyespot in cereals.

By combining both active ingredients the formulation serves as resistance management, in addition, depending on the crop, the performance on the target pathogens can be improved or the disease spectrum is broadened.

Referring to the resistance risk analysis it can be stated as follows:

One suitable measure of a resistance management strategy is the use of fungicide mixtures. Recent studies showed that especially mixtures help in delaying the selection of resistance (Hobbelen et al. 2013, 2014, van den Bosch et al. 2014).

BAS 762 02 F is a mixture of two compounds with different modes of action, which are both active against most target pathogens.

Mefentrifluconazole: FRAC describes the DMI fungicides in general as medium-risk compounds (FRAC 2020). There is no cross-resistance nor a correlation of the sensitivity to SBI fungicides and other modes of action.

Boscalid: FRAC describes the SDHI fungicides in general as medium to high-risk compounds (FRAC 2020). There is no cross resistance of SDHIs with fungicides with other modes of action.

Therefore, the combination of mefentrifluconazole (DMI) and boscalid (SDHI) serves as a built-in resistance management.

Justification of BAS 762 02 F in OSR and Sunflower

The main target of the formulation is the control of diseases at flowering in oilseed rape, namely *Sclerotinia sclerotiorum* and Alternaria species and during the whole vegetation period the control of major pathogens in sunflower, such as *Sclerotinia sclerotiorum*, *Alternaria helianthi*, *Diaphorte helianthi* and *Phoma macdonaldii*.

To justify the use of this formulation in all target crops, the activity of mefentrifluconazole and boscalid against major target diseases was investigated.

This includes an evaluation of the single active ingredients as well as the evaluation of the co-formulation BAS 762 02 F. In addition, two alternative ratios were tested, to define the final formulation composition for optimum disease control of the mentioned pathogens in oilseed rape and sunflower. Details to the tested compounds are shown in

Table 3.2-15.

Table 3.2-15: Products used to evaluate the activity of mefentrifluconazole and boscalid against major target diseases in oilseed rape and sunflower

	Product	Active ingredients	Formulation		Tested rate	
1.	BAS 510 01 F	Boscalid	500 g/kg	WG	0,4 ~~l~~ kg/ha	200 g/ha
2.	BAS 750 05 F	Mefentrifluconazole	75 g/l	SC	1,33 L/ha	100 g/ha
3.	BAS 750 05 F + BAS 510 01 F	Mefentrifluconazole + Boscalid	75 g/l + 500 g/kg	SC +WG	1,33 L/ha + 0,24 kg/ha	100 g/ha +120 g/ha
4.	BAS 750 05 F + BAS 510 01 F	Mefentrifluconazole + Boscalid	75 g/l + 500 g/kg	SC + WG	1,33 L/ha + 0,4 kg/ha	**100 g/ha + 200 g/ha**
5.	BAS 750 05 F + BAS 510 01 F	Mefentrifluconazole + Boscalid	75 g/l + 500 g/kg	SC + WG	0,8 L/ha + 0,4 kg/ha	60 g/ha + 200 g/ha

In 2018, trials were conducted in oilseed rape in France, Poland, the Czech Republic and Romania. In all trials the tested formulations were applied once during flowering stage from BBCH stage 61 – 67. The trials were 4 times replicated and fully randomized. Assessment was done by visually estimating the intensity of attack on stems or leaves 45-70 days after the treatment. ~~9~~ 7 trials did show a minimum of ~~4%~~ 5% intensity of *Sclerotinia sclerotiorum* attack in the untreated control. The assessment shown in the overview is the last assessment reported in these trials. One trial in Czech Republic also shows results for ~~was infested by~~ *Alternaria species.*

In sunflower in 2018 trials were conducted in Hungary, Romania and Slovakia. In the trials the tested formulations were applied ~~were treated~~ once between BBCH 35-51. The trials were 4 times replicated and fully randomized. Assessment was done by visually estimating the intensity of attack on stems or leaves 56-88 days after the treatment. 5 trials did show sufficient level of infestation in the untreated control. The assessment shown in the overview is the last assessment reported in these trials.

The results show a medium to good activity for both solo active ingredients at appropriate rates against the target diseases in oilseed rape and sunflower (see Table 3.2-16). The only exception is boscalid against *Sclerotinia sclerotiorum* in sunflower, where performance was low. Nevertheless, in oilseed rape performance of boscalid was good ~~on~~ in the control of the same disease.

By combining mefentrifluconazole and boscalid in BAS 762 02 F, superior activity compared to both solo compounds could be achieved. At ~~this~~ the target dose rate, a very consistent high level of performance was achieved. The two alternative ratios (100 g/ha + 120 g/ha and 60 g/ha + ~~and~~ 200 g/ha) did show lower performance ~~on~~ for all the presented diseases, which confirmed 100g/ha mefentrifluconazole and 200g/ha boscalid as the optimum target dose rate (Table 3.2-16).

Table 3.2-16: Solo and combined efficacy mefentrifluconazole and boscalid against major target disease in oilseed rape and sunflower; severity of attack

Target	No. of trials	UTC			Efficacy [%]														
		infestation			Boscalid			Mefentrifluconazole			Mefentrifluconazole + Boscalid								
		[%]			200 gai/ha			100 gai/ha			100+120 gai/ha			100+200 gai/ha			60+200 gai/ha		
		Mean	Min	Max	**Mean**	Min	Max	**Mean**	Min	Max	**Mean**	Min	Max	**Mean**	Min	Max	**Mean**	Min	Max
SCLESC oilseed rape	~~9~~ 7	~~19~~ **23**	~~4~~ 5	55	**64**	~~38~~ 43	100	~~68~~ **62**	36	100	~~83~~ **82**	37	100	~~90~~ **87**	54	100	~~80~~ **81**	37	100
ALTESP oilseed rape	1	~~25~~ **19**	-	-	**67**	-	-	**65**	-	-	**82**	-	-	**84**	-	-	**79**	-	-
SCLESC sunflower	1	**49**	-	-	**26**	-	-	**70**	-	-	**72**	-	-	**77**	-	-	**70**	-	-
DIAPHE sunflower	3	**9**	6	12	**48**	39	~~52~~ 53	**55**	45	63	**76**	64	~~82~~ 85	**86**	82	91	**69**	61	77

Target	No. of trials	UTC infestation [%]			Efficacy [%]														
					Boscalid 200 gai/ha			Mefentrifluconazole 100 gai/ha			Mefentrifluconazole + Boscalid 100+120 gai/ha			Mefentrifluconazole + Boscalid 100+200 gai/ha			Mefentrifluconazole + Boscalid 60+200 gai/ha		
		Mean	Min	Max	**Mean**	Min	Max	**Mean**	Min	Max	**Mean**	Min	Max	**Mean**	Min	Max	**Mean**	Min	Max
ALTESP sunflower	3	**23**	12	31	**56**	51	64	**67**	59	80	**78**	73	83	**80**	75	84	**71**	65	79
LEPTLI sunflower	1	**25**	-	-	**84**	-	-	**84**	-	-	**85**	-	-	**92**	-	-	**88**	-	-

Crop extension to cereals

Further studies were carried out ~~made~~ to evaluate the fit of this co-formulation for the use in cereals, especially for the use to control eyespot of wheat and early *Septoria* infections for T1 applications (BBCH 30-37).

Trials in cereals were conducted in 2017 and 2018 in Germany, Austria, the Czech Republic, Denmark, Poland, Lithuania, Slovakia, France, the United Kingdom, Romania and Bulgaria in winter wheat targeting *Zymoseptoria tritici* and *Oculimacula yallundae* ~~spp~~. In the trials targeting *Oculimacula yallundae* ~~spp~~. the tested formulations were applied between growth stage 29 ~~30~~ and 32. Trials with *Zymoseptoria tritici* were applied between BBCH 30 and 51, depending on the single trial. The trials were 4 times replicated and fully randomized. Assessment was done by visually estimating the intensity of attack on stems for *Oculimacula yallundae* ~~spp~~. at BBCH 75 or leaves for *Zymoseptoria tritici* 21-~~39~~ 69 days after the treatment.

As the ratio used for oilseed rape and sunflower should be kept for cereals to have a multicrop label, no dedicated ratio justification was conducted for wheat. However, the contribution of the single ai's on the targeted diseases was tested. Details are shown in Table 3.2-17.

Table 3.2-17: Products used to evaluate the activity of mefentrifluconazole and boscalid against major target diseases in cereals

	Product	Active ingredients	Formulation		Tested rate	
1.	BAS 762 02 F	Mefentrifluconazole + Boscalid	100 g/l + 200 g/l	SC	1.0 L/ha	100 g/ha + 200 g/ha
2.	BAS 750 01 F	Mefentrifluconazole	100 g/l	EC	1.0 L/ha	100 g/ha
3.	BAS 510 05 F	Boscalid	500 g/kg	WG	0.4 ~~L~~ kg/ha	200 g/ha

The performance of BAS 762 F was tested in comparison to an appropriate solo dose rate of mefentrifluconazole in the trials carried out in 2017. In 2018, the performance of BAS 762 F was tested in comparison to an appropriate solo dose rate of boscalid.

Boscalid did show good performance on both diseases in most of the trials. Mefentrifluconazole did show a good performance on Septoria leaf blotch, but only limited efficacy on eyespot.

Nevertheless, the combined co-formulation BAS 762 00 F did show superior performance in comparison to both single active ingredients and outperformed the standard on eyespot and showed similar performance as the standard against *Zymoseptoria tritici* (see Table 3.2-18).

Table 3.2-18: Solo and combined efficacy mefentrifluconazole and boscalid against major target disease in cereals

Target	No. of trials	UTC			Efficacy [%]											
		infestation			BAS 76202 F Mefentrifluconazole + Boscalid			Mefentrifluconazole			Boscalid			Prothioconazole		
		[%]			100+200 g ai/ha			100 g ai/ha			200 g ai/ha			200 g ai/ha		
		Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max
Oculimacula spp. yallundae	8	**41**	14	73	**58**	31	91	**25**	0	62	-	-	-	-	-	-
Oculimacula spp. yallundae	16	~~35~~ **33**	6	66	~~70~~ **68**	0	100	-	-	-	~~56~~ **55**	17	90	~~57~~ **55**	~~12~~ 11	100
Zymospetoria tritici	8	~~30~~ **32**	13	63	~~69~~ **68**	34	90	~~61~~ **62**	~~36~~ 40	~~94~~ 95	-	-	-	-	-	-
Zymospetoria tritici	3	~~17~~ **16**	10	25	~~75~~ **76**	62	100	-	-	-	~~68~~ **69**	~~44~~ 46	100	**74**	56	100

Conclusion

BAS 762 02 F contains boscalid and mefentrifluconazole which both show medium to good efficacy against major diseases in oilseed rape, sunflower and wheat. The combination of both did lead to a superior control, compared to the single active ingredients. The chosen ratio of 100 g/ha mefentrifluconazole and 200 g/ha boscalid ~~proofs~~ proves to be the best technical solution for oilseed rape and sunflower, as the alternatively tested ratios did perform inferior. For wheat also the contribution of both active ingredients was proven on the target diseases. As the target ratio for oilseed rape and sunflower wanted to be kept, no distinct ratio justification was done for wheat. Nevertheless, also in wheat the combination of BAS 762 02 F proved superior control over the single active ingredients and at the full to be registered dose rate shows excellent activity also in comparison to the standard.
With this target ratio in BAS 762 02 F, a very consistent high level of performance could be achieved for all shown diseases.

Bridging trials

Several formulations of the product were tested in the field trials in the course of years.
BAS 762 AL F (SC+ formulation) was tested in 2018 in the field trials together with BAS 762 00 F. BAS 762 AL F showed a better performance, therefore it was decided to continue in testing of this formulation. BAS 762 AL F was further modified with the target to improve retention and physical stability and the final formulation BAS 762 02 F was released. The formulation BAS 762 02 F was then tested in the efficacy trials in 2019 and 2020.

The available results of efficacy tests obtained with the formulation BAS 762 00 F in 2018 and with the formulation BAS 762 02 F in 2019 have been included in ~~this Biological Assessment Dossier~~ draft registration report to prove the efficacy and selectivity of the product, as well as to justify the Minimum Effective Dose rate for the requested uses. The final formulation BAS 762 02 F provided equal or slightly better efficacy on target diseases than the previous formulation BAS 762 00 F. It is considered that with inclusion of BAS 762 00 F the performance of the final product BAS 762 02 F is in no case overestimated, on the contrary, slightly better performance can be expected at the end.

In dossier tables, both formulations – BAS 762 00 F and BAS 762 02 F - are summarized together and, for simplification, the final code BAS 762 02 F is mentioned as the product code within the whole ~~BAD~~ dRR.

Data for bridging between the different formulations are provided in this chapter. Information is separated by the target crops.

Oilseed rape

No orthogonal testing of both formulations – BAS 762 00 F and BAS 762 02 F - was conducted in oilseed rape in years 2018 and 2019. Nevertheless, orthogonal testing of BAS 762 00 F and BAS 762 AL F was done in several efficacy trials in 2018. In 2019, BAS 762 AL F and BAS 762 02 F were tested side by side in several efficacy trials.

A stepwise approach is taken to justify the comparability of results obtained with BAS 762 00 F and BAS 762 02 F. In the first step, the performances of BAS 762 00 F and BAS 762 AL F are compared. In the second step, BAS 762 AL F are compared to the final BAS 762 02 F.

In oilseed rape, bridging is done on *Sclerotinia sclerotiorum*, as the main target disease of oilseed rape.

Results of 13 trials from 2018 allow to compare efficacy of BAS 762 00 F and BAS 762 AL F. It is observed across the data set that BAS 762 AL F provides comparable or slightly better performance than BAS 762 00 F.

Results of 14 trials from 2019 allow to compare efficacy of BAS 762 AL F with the final formulation BAS 762 02 F. It is observed across the data set that BAS 762 02 F provides comparable or slightly better performance than BAS 762 AL F.

It was confirmed with numerous trials across Europe that during the course of product development and formulation improvement the tendency of slightly increasing efficacy was kept. It can be concluded that the final formulation of the product BAS 762 02 F provides comparable or slightly higher and more consistent efficacy on *Sclerotinia sclerotiorum* in oilseed rape than the previous formulation BAS 762 00 F. It is concluded that the results obtained with BAS 762 00 F will not cause overestimation of the claimed efficacy of the final product.

Additionally 8 bridging trials carried out in 2020 have been submitted at the time of evaluation process to compare efficacy between BAS 762 00 F and the final product BAS 762 02 F. Results from these trials are presented in the table 3.2-20a. Efficacy of BAS 762 02 F was comparable or slightly better than efficacy of BAS 762 00 F in the control of *Sclerotinia sclerotiorum* in these trials.

The use of BAS 762 00 F for purpose of this submission is considered as justified.

Table 3.2-19: Bridging trials 1, Oilseed rape, SCLESC, intensity of attack (infect and efficacy in %)

EPPO Zone climatic			Untreated	BAS 762 00 F 1 L/ha		BAS 762 AL F 1 L/ha		BAS 9488 0 F 1 L/ha	
			infect	infect	~~infect~~ efficacy	infect	efficacy	infect	efficacy
Maritime	**n=1**	mean	**8,5**	1,5	**82,4**	1,3	**84,3**	1,4	**83,3**
		(min-max)	(8,5-8,5)	(1,5-1,5)	(82,4-82,4)	(1,3-1,3)	(84,3-84,3)	(1,4-1,4)	(83,3-83,3)
North east	**n=4**	mean	~~18,5~~ **18,6**	4,5	**76,4**	4,0	**80,6**	5,0	**77,6**
		(min-max)	(11,1-33)	(1,9-8,5)	(68,3-87,1)	(1,3-9)	(72,7-91,3)	(0,8-11,8)	(63,5-93,2)
South east	**n=8**	mean	**21,8**	5,5	**80,7**	4,2	**85,0**	5,8	**76,0**
		(min-max)	(6-38,6)	(0-12,9)	(65,8-100)	(0-10)	(73,5-100)	(0-14,9)	(60,5-100)
Total ALL	**n=13**	mean	**19,8**	4,9	**79,5**	3,9	**83,6**	5,2	**77,0**
		(min-max)	(6-38,6)	(0-12,9)	(65,8-100)	(0-10)	(72,7-100)	(0-14,9)	(60,5-100)

Table 3.2-20: Bridging trials 2, Oilseed rape, SCLESC, intensity of attack (infect and efficacy in %)

EPPO Zone climatic			Untreated	BAS 762 AL F 1 L/ha		BAS 762 02 F 1 L/ha		BAS 9488 0 F 1 L/ha	
			infect	infect	~~infect~~ efficacy	infect	efficacy	infect	efficacy
Maritime	**n=6**	mean	**23,6**	4,3	**84,6**	2,9	**89,2**	2,6	**88,9**
		(min-max)	(4,9-45)	(0-12,3)	(63-100)	(0-7,5)	(71,9-100)	(0-6,8)	(63-100)
North east	**n=3**	mean	**21,7**	~~5,2~~ 5,3	**80,2**	2,8	**92,8**	5,1	**81,3**
		(min-max)	(9,3-38)	(0,4-10,3)	(71,3-96,2)	(0-8,3)	(78,3-100)	(0,2-10)	(71,8-98,4)
South east	**n=5**	mean	~~24,4~~ **24,5**	1,8	**90,9**	~~1,7~~ 1,8	**92,1**	2,1	**90,6**
		(min-max)	(11,5-51,2)	(0-3,8)	(79,7-100)	(0-2,8)	(81,4-100)	(0-3,3)	(81,4-100)
Total ALL	**n=14**	mean	**23,5**	3,6	**85,9**	2,4	**91,0**	2,9	**87,9**
		(min-max)	(4,9-51,2)	(0-12,3)	(63-100)	(0-8,3)	(71,9-100)	(0-10)	(63-100)

Table 3.2-21a: Bridging trials 3, Oilseed rape, SCLESC, intensity of attack (infect and efficacy in %)

EPPO Zone climatic			Untreated	BAS 762 00 F 1 L/ha		BAS 762 02 F 1 L/ha		BAS 9488 0 F 1 L/ha	
			infect	infect	~~infect~~ efficacy	infect	efficacy	infect	efficacy
Maritime	**n=5**	mean	**41,2**	11,1	**73,9**	10,6	**74,2**	13,6	**67,8**
		(min-max)	(14,3-73)	(4,4-30,8)	(57,9-91,2)	(2,7-29)	(60,3-95,5)	(4,5-34,5)	(48,8-87,8)
North east	**n=2**	mean	**27**	3,1	**87,4**	4,1	**87,8**	3,8	**86,9**
		(min-max)	(14,8-39,3)	(2,3-3,8)	(84,4-90,3)	(0,8-7,45)	(81-94,6)	(1,6-6,1)	(84,6-89,2)
South east	**n=1**	mean	**7,9**	0,4	**95,5**	0,4	**95,5**	2,6	**67,5**
		(min-max)							
Total ALL	**n=8**	mean	**33,5**	7,7	**80**	7,7	**80,3**	9,8	**72,5**
		(min-max)	(7,9-73)	(0,4-30,8)	(57,9-95,5)	(0,4-29)	(60,3-95,5)	(1,6-34,5)	(48,8-89,2)

Sunflower

Two formulations of the product - BAS 762 00 F and BAS 762 02 F - appear in the efficacy trials in sunflower and are outlined in detail in ~~this~~ BAD and summarized in dRR. Both formulations were tested side by side in altogether 13 trials in order to provide an orthogonal comparison. The trials were conducted in the Maritime and the South east EPPO zones. They provided efficacy data on *Diaporthe helianthi*, *Plenodomus lindquistii*, *Sclerotinia sclerotiorum* and *Alternaria helianthi*.

It can be concluded that the final formulation of the product BAS 762 02 F provides comparable or even slightly higher and more consistent efficacy on *Diaporthe helianthi*, *Plenodomus lindquistii*, *Sclerotinia sclerotiorum* and *Alternaria helianthi* in sunflower than the previous formulation BAS 762 00 F. It is concluded that the results obtained with BAS 762 00 F will not cause overestimation of the claimed efficacy of the final product.

The use of BAS 762 00 F for registration of BAS 762 02 F in sunflower is therefore considered as justified.

Table 3.2-22: Bridging trials, Sunflower, different diseases, intensity of attack (infect and efficacy in %)

Pathogen	EPPO zone climatic	No, of trials	Plant part	No, of assessm, per PP		Untreated	BAS 762 00 F 1 L/ha		BAS 762 02 F 1 L/ha		BAS 9488 0 F 1 L/ha	
						infect	infect	efficacy	infect	efficacy	infect	efficacy
DIAPHE	**Maritime**	**n = 2**	**leaf**	**n = 1**	mean	**9,0**	4,8	**46,3**	2,5	**72,3**	3,2	**64,3**
					(min-max)	(9–9)	(4,8–4,8)	(46,3–46,3)	(2,5–2,5)	(72,3–72,3)	(3,2–3,2)	(64,3–64,3)
			stem	**n = 1**	mean	**17,4**	10,0	**42,4**	7,3	**58,1**	13,6	**21,8**
					(min-max)	(17,4–17,4)	(10–10)	(42,4–42,4)	(7,3–7,3)	(58,1–58,1)	(13,6–13,6)	(21,8–21,8)
	South east	**n = 3**	**leaf**	**n = 2**	mean	**19,6**	4,8	**77,8**	5,5	**74,9**	5,9	**73,3**
					(min-max)	(14,5–24,7)	(1,9–7,8)	(68,3–87,2)	(1,9–9,2)	(62,8–87,1)	(2,1–9,6)	(61,1–85,4)
			stem	**n = 2**	mean	**22,0**	2,2	**84,6**	3,4	**77,2**	4,3	**75,5**
					(min-max)	(11,4–32,7)	(1,4–3)	(73,6–95,7)	(2,5–4,3)	(62,1–92,3)	(3,9–4,8)	(65,6–85,5)
	Total ALL	**n = 5**	**leaf**	**n = 3**	mean	**16,1**	4,8	**67,3**	4,5	**74,1**	5,0	**70,3**
					(min-max)	(9–24,7)	(1,9–7,8)	(46,3–87,2)	(1,9–9,2)	(62,8–87,1)	(2,1–9,6)	(61,1–85,4)
			stem	**n = 3**	mean	**20,5**	4,8	**70,6**	4,7	**70,8**	7,4	**57,6**
					(min-max)	(11,4–32,7)	(1,4–10)	(42,4–95,7)	(2,5–7,3)	(58,1–92,3)	(3,9–13,6)	(21,8–85,5)
LEPTLI	**Total ALL** (SE only)	**n = 3**	**stem**	**n = 3**	mean	**21,7**	7,0	**68,4**	5,9	**73,2**	7,8	**64,5**
					(min-max)	(20,5–22,5)	(1,3–12,9)	(41,6–93,5)	(2,1–9,2)	(58,4–90)	(2,5–14,2)	(35,7–87,9)
SCLESC	**Total ALL** (SE only)	**n = 1**	**stem**	**n = 1**	mean	**18,7**	4,9	**73,8**	5,3	**71,9**	5,3	**71,9**
					(min-max)	(18,7–18,7)	(4,9–4,9)	(73,8–73,8)	(5,3–5,3)	(71,9–71,9)	(5,3–5,3)	(71,9–71,9)
ALTEHE	**Maritime**	**n = 1**	**leaf**	**n = 1**	mean	**11,0**	5,0	**55,0**	6,4	**41,8**	6,6	**40,4**
					(min-max)	(11–11)	(5–5)	(55–55)	(6,4–6,4)	(41,8–41,8)	(6,6–6,6)	(40,4–40,4)
	South east	**n = 2**	**leaf**	**n = 2**	mean	**22,2**	5,8	**77,6**	5,8	**76,8**	4,6	**81,3**
					(min-max)	(16,3–28,1)	(1,5–10)	(64,3–90,8)	(2–9,6)	(66–87,7)	(1,8–7,5)	(73,4–89,2)
	Total	**n = 3**	**leaf**	**n = 3**	mean	~~18,4~~ **18,5**	5,5	**70,0**	6,0	~~65,1~~ **65,2**	5,3	**67,7**

	ALL	(min-max)	(11–28,1)	(1,5–10)	(55–90,8)	(2–9,6)	(41,8–87,7)	(1,8–7,5)	(40,4–89,2)

Wheat

In wheat, both formulations BAS 762 00 F and BAS 762 02 F were tested aside in several efficacy trials in 2019. Bridging data on *Oculimacula yallundae* species and *Zymoseptoria tritici* in wheat are provided in this chapter.

Results of 6 trials on *Oculimacula yallundae* species and 6 trials on *Zymoseptoria tritici* demonstrate that BAS 762 02 F provides comparable or slightly better performance than BAS 762 00 F. On For both diseases pathogens the performance of BAS 760 02 F was more consistent.

It was confirmed with trials across both Maritime and North east EPPO zones that during the course of product development and formulation improvement the tendency of slightly increasing efficacy was kept. It can be concluded that the final formulation of the product BAS 762 02 F provides comparable or slightly higher and more consistent efficacy on *Oculimacula yallundae* species and *Zymoseptoria tritici* in wheat than the previous formulation BAS 762 00 F. It is concluded that the results obtained with BAS 762 00 F will not cause overestimation of the claimed efficacy of the final product.

The use of BAS 762 00 F for purpose of this submission is considered as justified.

Table 3.2-23: Bridging trials, Wheat, *Oculimacula yallundae* species, intensity of attack (infect and efficacy in %)

EPPO Zone			**Untreated**	**BAS 762 00 F 1 L/ha**		**BAS 762 02 F 1 L/ha**		**BAS 9314 1 F 0,8 L/ha**		**BAS 560 00F 0,5 L/ha**	
climatic			**infect**	**infect**	infect **efficacy**	**infect**	**efficacy**	**infect**	**efficacy**	**infect**	**efficacy**
Maritime	**n=3**	mean	**13,8**	5,9	**63,9**	4 1	**72,2**	5,9 5,8	**57,8**	4,8	**65,8**
		(min-max)	(8,5-17,5)	(0,3-11)	(37,1-97,1)	(1,3-6,8)	(55,7-85,3)	(2,5-12)	(21,3-81,4)	(3- 8)	(55,7-77)
North east	**n=3**	mean	**34,1**	10,1	**71,1**	8,5	**77,2**	5,0	**85,6**	11,2	**72,2**
		(min-max)	(23,5-43,5)	(5,8-13,8)	(68,4-75,5)	(2,8-14,8)	(66,1-88,3)	(2,3-7,8)	(78-90,4)	(0,8-23,8)	(45,4-96,8)
Total ALL	**n=6**	mean	**23,9**	8,0	**67,5**	6,3	**74,7**	5,5 5,4	**71,7**	8,0	**69,0**
		(min-max)	(8,5-43,5)	(0,3-13,8)	(37,1-97,1)	(1,3-14,8)	(55,7-88,3)	(2,3-12)	(21,3-90,4)	(0,8-23,8)	(45,4-96,8)

\Table 3.2-24: Bridging trials, Wheat, *Zymoseptoria tritici*, intensity of attack (infect and efficacy in %)

EPPO Zone			**Untreated**	**BAS 762 00 F 1 L/ha**		**BAS 762 02 F 1 L/ha**		**BAS 9314 1 F 0,8 L/ha**		**BAS 560 00F 0,5 L/ha**	
climatic			**infect**	**infect**	infect **efficacy**	**infect**	**efficacy**	**infect**	**efficacy**	**infect**	**efficacy**
Maritime	**n=4**	mean	**14,9**	2,6	**82,9**	2,8	**85,1**	2,1	**85,3**	3,0	**80,5**
		(min-max)	(5,1-20,5)	(0,8-6,5)	(68,3-91,1)	(0,1-8)	(61-98,8)	(0,9-3)	(81,5 81,4-90)	(0,8-8,5)	(58,5-96,8)
North east	**n=2**	mean	**13,7**	5,2	**72,8**	3,9	**80,0**	7,7	**61,2**	8,1	**55,8**
		(min-max)	(6,2-21,3)	(0,5-10)	(52,9-92,7)	(0,3-7,5)	(64,7-95,3)	(0,4-15)	(29,4-93)	(1,1-15)	(29,4-82,2)
Total ALL	**n=6**	mean	**14,5**	3,5	**79,6**	3,2	**83,4**	4,0	**77,3**	4,7	72,3 **72,2**
		(min-max)	(5,1-21,3)	(0,5-10)	(52,9-92,7)	(0,1-8)	(61-98,8)	(0,4-15)	(29,4-93)	(0,8-15)	(29,4-96,8)

Summary and conclusions on the preliminary trials

Considering the information presented in the Preliminary trials chapter of this Biological Assessment Dossier it can be concluded that:

- The chosen ratio of 200 g ai/ha boscalid and 100 g ai/ha mefentrifluconazole provides the highest, and the most consistent efficacy on the main pathogens of the oilseed rape, sunflower and wheat.
- Earlier formulation of the product, BAS 762 00 F, included in some of the efficacy trials submitted in this Biological Assessment Dossier, is considered comparable in terms of efficacy to the final commercial formulation of the product BAS 762 02 F. The use of both formulations for the purpose of this submission has been justified.

Comments of zRMS on:
preliminary tests (3.2.1)

Ratio and Co-formulation justification

44 trials have been submitted by the applicant to justify the co-formulation mixture (100 g mefentrifluconazole/ha + 200 g boscalid/ha). Preliminary tests were carried out in winter oilseed rape (9 trials conducted in CZ, FR, PL, RO in 2018), sunflower (5 trials conducted in SK, RO, HU) and winter wheat (30 trials conducted in DE, FR, PL, UK, CZ, DK, LT, SK, BG, AT, RO in 2017 and 2018) affected by the target pathogens (SCLESC, ALTESP on BRSNW and HELAN; DIAPHE, LEPTLI on HELAN; PSDCHE, SEPTTR on TRZAW). Results from two trials carried out in oilseed rape for SCLESC control have been excluded from the evaluation because of low infestation level (<5% disease intensity). The co-formulation mixture (100 g mefentrifluconazole/ha + 200 g boscalid/ha) was compared to the formulations containing single mefetrifluconazole (100 g a.i./ha) or boscalid (200 g a.i./ha) in the trials carried out in oilseed rape and sunflower. Additionally results for two other dose rates of the tested co-formulation mixture (100 g mefentrifluconazole/ha + 120 g boscalid/ha and 60 g mefentrifluconazole/ha + 200 g boscalid/ha) have been presented to justify the final dose rate of the tested product (BAS 762 02 F). The benefits of use co-formulation mixture in comparison with single mefentrifluconazole and boscalid formulations have been shown in all the trials in the control of SCLESC, ALTESP on BRSNW and HELAN; DIAPHE, LEPTLI on HELAN and PSDCHE, SEPTTR on TRZAW. The average efficacy of co-formulation mixture (100 g mefentrifluconazole/ha + 200 g boscalid/ha) was higher by about 23%; 17%; 51%; 38%; 24%; 8% for SCLESC, ALTESP in BRSNW, SCLESC, DIAPHE, ALTESP and LEPTLI control respectively in comparison with single boscalid formulation and by about 25%; 19%; 7%; 31%; 13%; 8% for SCLESC, ALTESP in BRSNW, SCLESC, DIAPHE, ALTESP and LEPTLI control respectively in comparison with single mefentrifluconazole formulation. The efficacy of co-formulation at target dose rate (100 g mefentrifluconazole/ha + 200 g boscalid/ha) was visibly better as compared to two additional dose rates (100 g mefentrifluconazole/ha + 120 g boscalid/ha and 60 g mefentrifluconazole/ha + 200 g boscalid/ha) in most of the trials. In winter wheat a part of the trials presents the comparison between co-formulation mixture (100 g mefentrifluconazole/ha + 200 g boscalid/ha) and single mefentrifluconazole formulation (100 g a.i./ha). A separate data package presents results from the trials in which co-formulation mixture (100 g mefentrifluconazole/ha + 200 g boscalid/ha), single boscalid formulation (200 g a.i./ha) and reference product (200 g prothioconaozole/ha) were tested and compared. The average efficacy of co-formulation was higher by about 33% and 6% for PSDCHE and SEPTTR control respectively in comparison with single mefetrifluconazole formulation and by about 13% and 7 % for PSDCHE and SEPTTR control respectively in comparison with single boscalid formulation. The efficacy of reference product in the control of PSDCHE and SEPTTR was visibly lower or on the similar level as efficacy co-formulation mixture of mefentrifluconazole with boscalid in most of the trials.
Based on the submitted preliminary efficacy trial results it can be concluded that the use of co-formulation of mefentrifluconazole and boscalid has been convincingly justified. Additionally the proper ratio of active substances in BAS 762 02 F (100 g mefentrifluconazole/ha + 200 g boscalid/ha) has been proved.

Bridging trials
Three formulations: BAS 762 00 F, BAS 762 AL F and the final BAS 762 02 F were tested in the course of efficacy trials. All of them contain 100 g/l mefentrifluconazole and 200 g/la boscalid and differ in the amount of some co-formulants. 50 bridging trials were provided in total, including: 27 trials carried out in BRSNW (trials from FR, CZ, LT, PL, HU, RO, SK), in which BAS 762 00 F or BAS 762 02 F was compared with BAS 762 AL F in the control of SCLESC; 7 trials conducted in HELAN (trials from CZ, RO, HU, SK) to compare BAS 762 00 F with BAS 762 02 F in the control of DIAPHE, LEPTLI, SCLESC or ALTESP; 8 trials carried out in TRZAW (trials from CZ, DE, UK, PL) to compare BAS 762 00 F with BAS 762 02 F in the control PSDCHE or SEPTTR and the lasting 8 trials carried out in BRSNW (trials from CZ, DE, FR, PL, SK) in which efficacy of BAS 762 00 F was compared with BAS 762 02 F in the control of SCLESC – additional trials submitted at the time of the evaluation process. Summarizing trial results, BAS 762 AL F performed comparably or slightly better than BAS 762 00 F, whereas BAS 762 02 F performed comparably or slightly better than BAF 762 AL F in the control of SCLESC in oilseed rape. The efficacy of BAS 762 02 F was usually comparable or slightly better than efficacy of BAS 762 00 F in the control of SLESC on BRSNW, DIAPHE, LEPTLI, SCLESC and ALTESP on HELAN and PSDCHE and SEPTTR on TRZAW.
Based on the trial results it can be concluded that trials with BAS 762 00 F can be used in the efficacy evaluation of the target fungicide BAS 762 02 F. for simplicity, only the code name BAS 762 02 F will be used in the evaluation.

3.2.2 Minimum effective dose tests (KCP 6.2)

BAS 762 02 F is intended to control a range of target diseases in several crops. In such situation, it would be impractical and unnecessary to provide evidence for the minimum effective dose for each single disease in each crop. Information is required for a range of targets which are considered to be the most important and for which control provides a major agricultural benefit.

In the oilseed rape, the justification is presented on a huge data set in *Sclerotinia sclerotiorum* which is considered to be the key target disease in this crop. In the sunflower, the data is provided on *Diaporthe helianthi*, *Plenodomus lindquistii*, *Sclerotinia sclerotiorum* and *Alternaria helianthi* and in wheat the justification has been conducted on *Oculimacula yallundae* and *Zymoseptoria tritici*.

Between years 2018-2019 the minimum effective dose tests for BAS 762 02 F were conducted in ~~136~~ 138 field trials across the Europe. All trials were performed in comparison to the standards and according to the methodology already explained.

In North-East zone and majority of countries in the Maritime zone (except for the Czech Republic), the target dose rate of 1 L/ha is proposed. In the concerned member states from the South-East EPPO zone, a dose range of 0,6 L/ha – 1 L/ha is requested. In countries like Hungary, Slovakia, Slovenia and Romania, the use of lower than registered dose rates ~~are~~ is not permitted by legislation. This implies the need for registered dose rate ranges in order to provide flexibility in use rate to farmers depending on disease pressure and weather conditions in these countries. In other countries the label gives the farmer guidance on the dose rates to be used and thus the explicit dose rate range on the label is a seen as a benefit. Therefore, a dose rate range is proposed. A discussion for the dose rate range is provided in a separate chapter.

Oilseed rape, *Sclerotinia sclerotiorum*

Altogether 52 field trials were carried out in order to determine the minimum effective dose for the control of *Sclerotinia sclerotiorum* on oilseed rape. Results from 2 trials carried out in Czech Republic have been excluded from the evaluation due to low pest severity <5%). Trials were conducted in years 2018 and 2019 in the Maritime climatic zone (the Czech Republic, Germany and France), the North East climatic zone (Poland) and the South East climatic zone (Hungary, Romania and Slovakia). BAS 762 02 F was tested at 2 dose rates: 0,6 and 1 L/ha. Crops were sprayed at flowering time at growth stages ranging from BBCH 61-67.

Assessments on stems, leaves or whole plant around BBCH 85 (ranging BBCH 83-89) were chosen for evaluation. The same assessments are presented in this chapter as later (with just full dose rate) in the main efficacy chapter.

Results are provided in

Table 3.2-25.

Higher performance of the full dose rate in comparison to reduced dose rate was observed in the vast majority of the trials. Only in 3 trials, the same (full) control was achieved with both dose rates. In the remaining ~~49~~ 47 trials the higher dose rate of 1 L/ha has always outperformed the reduced dose rate of 0,6 L/ha. In average of all trials across all climatic zones, the full dose rate resulted in +12,3 percentage points above the reduced dose rate and was considerably more consistent in performance (unlike with the reduced dose rate the efficacy of the full dose rate did not drop down under 55%). The target dose rate of 1 L/ha is therefore considered as justified in oilseed rape.

Conclusion

The proposed dose rate of 1 L/ha of BAS 762 02 F provided the optimum overall control and should be considered as the minimum effective dose to deliver optimum control of *Sclerotinia sclerotiorum* in oilseed rape under a wide range of environmental conditions.

Table 3.2-25: Minimum Effective Dose, Oilseed rape, SCLESC, intensity of attack (infect and efficacy in %).

EPPO Zone climatic			Untreated	BAS 762 02 F 0,6 L/ha		BAS 762 02 F 1 L/ha		BAS 9488 0 F 1 L/ha	
			infect	infect	efficacy	infect	efficacy	infect	efficacy
Maritime	n=22 **20**	mean	21,9 **23,7**	4,6 4,9	80,3 **80,5**	3,1 3,4	87,4 **87,1**	2,3 2,4	88,6 **90,3**
		(min-max)	(4,3 4,9-54,6)	(0-17,8)	(14,5-100)	(0-11)	(55,4-100)	(0-6,8)	(42,6 63,0-100)
North east	**n=11**	mean	**20,7**	6,8	**69,7**	4,0	**83,2**	5,2	**78,4**
		(min-max)	(8,6-43)	(0,9-16,8)	(43,6-90,3)	(0-11,8)	(66,2-100)	(0-14,3)	(53,8-100)
South east	**n=19**	mean	**23,1**	6,8	**71,7**	2,3	**89,2**	3,0	**86,7**
		(min-max)	(7,2-51,2)	(0,1-21,6)	(42,3-99,3)	(0-7,5)	(69,6-100)	(0-9,7)	(70,2-100)
Total ALL	n=52 **50**	mean	22,1 **22,8**	5,9 6,1	74,9 **74,8**	3,0 3,1	87,2 **87,1**	3,2 3,3	85,8 **86,3**
		(min-max)	(4,3 4,9-54,6)	(0-21,6)	(14,5-100)	(0-11,8)	(55,4-100)	(0-14,3)	(42,6 63-100)

Oilseed rape, *Alternaria sp.*

Five trials from MAR zone presents also efficacy data for BAS 762 02 F tested at lower dose rate 0,6 L/ha against *Alternaria* sp. and can be used for dose rate justification. A visible dose response was observed between dose rate of 0,6 and 1,0 /ha of BAS 762 02 F (difference in efficacy 9% in favour of higher dose rate). Results from these trials confirm dose rate of 1,0 L/ha as MED dose for BAS 762 02 F.

Table 3.2-26a: Minimum Effective Dose, Oilseed rape, ALTESP, intensity of attack (infect and efficacy in %).

EPPO Zone climatic			Untreated	BAS 762 02 F 0,6 L/ha		BAS 762 02 F 1 L/ha		BAS 9488 0 F 1 L/ha	
			infect	infect	efficacy	infect	efficacy	infect	efficacy
Maritime	**n=5**	mean	**16,1**	5,7	**63,5**	4,4	**72,6**	3,6	**78**
		(min-max)	(8,6-25)	(3,67-10)	(51,6-77,1)	(1,3-10)	(55,4-100)	(1,8-7,5)	(70-87,5)

Sunflower, different diseases

Altogether 54 field trials were carried out in sunflower in order to determine the minimum effective dose for the control of *Diaporthe helianthi*, *Plenodomus lindquistii*, *Sclerotinia sclerotiorum* and *Alternaria helianthi*. Trials were conducted in years 2018 and 2019 in the Maritime climatic zone (the Czech Republic and France) and the South East climatic zone (Bulgaria, Hungary, Romania and Slovakia). BAS 762 02 F was tested at 2 dose rates: 0,6 and 1 L/ha. Crops were sprayed according to the GAP within the BBCH 31-69. Beside the one application, both dose rates were tested also in 2 applications (interval 19-43 days) in altogether 11 trials.

Summary of results is available in Table 3.2-27.

Like in the main efficacy part, assessments done on stems around BBCH 85 (ranging BBCH 69-89) with min 5% infection threshold in untreated were chosen for evaluation. On *Diaporthe helianthi* and *Alternaria helianthi* also the leaf assessments around BBCH 75 are presented because of large number of trials in which only the leaf infection was observed.

Higher performance of the full dose rate in comparison to reduced dose rate was observed in the vast majority of the trials. Although the reduced dose rate also gave already good efficacy in some trials, the full dose rate of 1 L/ha was clearly more efficient and its performance was more consistent than the reduced dose rate. In average of all trials across both climatic zones, the full dose rate resulted in +10,3 10,6 - +13,1 14,8 percentage points above the reduced dose rate on leaves and in +12,2 7 - +14,8 16,3 percentage points above the reduced dose rate on stems.

The orthogonal comparison of both dose rates applied as both single and double treatments showed advantage of double treatment. The second application significantly increases the chance that the disease is hit at the right time. From altogether 19 assessments presented, the reduced dose rate applied twice gave comparable efficacy (=less than 5% points difference) to the target dose rate applied once in 8 trials. In the remaining 11 cases, the double application of 0,6 L/ha performed better than the single application of the maximum dose rate. 2 Hungarian trials, even no efficacy was observed on plot treated once with 1 L/ha

while 83% and 70% of efficacy were reached with double application of 0,6 L/ha. The double application of 1 L/ha showed further slight increase of efficacy.

Conclusion

The proposed dose rate of 1 L/ha of BAS 762 02 F provided the optimum overall control and should be considered as the minimum effective dose to deliver optimum fungicidal control in sunflower under a wide range of environmental conditions. In addition, the double application further increases the chance of the optimum application timing and may further increase the efficacy – especially on diseases such as *Alternaria helianthi* and *Plenodomus lindquistii* which are known to occur throughout the whole crop season.

Table 3.2-27: Minimum Effective Dose, Sunflower, different diseases, single application, intensity of attack (infect and efficacy in %), stem and leaf.

Pathogen	EPPO zone climatic	No, of trials	Plant part (PP)	No, of assessm, per PP		Untreated	BAS 762% F BAS 762 02 F 0,6 L/ha		BAS 762% F BAS 762 02 F 1 L/ha		BAS 94880 F 1 L/ha	
						infect	infect	efficacy	infect	efficacy	infect	efficacy
DIAPHE	Maritime	n = 2	leaf	n = 1	mean	**36,2**	15,0	**58,7**	17,4	**52,0**	18,6	**48,6**
					(min-max)	(36,2–36,2)	(15–15)	(58,7–58,7)	(17,4–17,4)	(52–52)	(18,6–18,6)	(48,6–48,6)
			stem	n = 1	mean	**12,4**	4,1	**66,7**	3,5	**72,2**	4,8	**61,3**
					(min-max)	(12,4–12,4)	(4,1–4,1)	(66,7–66,7)	(3,5–3,5)	(72,2–72,2)	(4,8–4,8)	(61,3–61,3)
	South east	n = 13	leaf	n = 12	mean	**10,1**	2,2	**78,3**	0,9	**90,3**	0,9	**90,7**
					(min-max)	(7,1–14,4)	(0,2–4,3)	(62,2–97,5)	(0–2,7)	(72,2–100)	(0–2,3)	(76,6–100)
			stem	n = 4	mean	**19,2**	3,9	**72,9**	2,3	86,7 **86,6**	2,5	**86,9**
					(min-max)	(5,8–51,2)	(1,3–6,7)	(56,7–87)	(0,7–5,4)	(84,3–89,4)	(0,4–6,1)	(80,7–93)
	Total ALL	n = 15	leaf	n = 13	mean	**12,1**	3,2	**76,8**	2,2	**87,4**	2,3	**87,4**
					(min-max)	(7,1–36,2)	(0,2–15)	(58,7–97,5)	(0–17,4)	(52–100)	(0–18,6)	(48,6–100)
			stem	n = 5	mean	17,8 **17,9**	3,9	**71,6**	2,5	83,8 **83,7**	2,9	81,8 **81,7**
					(min-max)	(5,8–51,2)	(1,3–6,7)	(56,7–87)	(0,7–5,4)	(72,2–89,4)	(0,4–6,1)	(61,3–93)
LEPTLI	Maritime	n = 7	stem	n = 7	mean	12,2 **12,1**	5,8	58,5 **58,1**	4,3	66,0 **66,4**	5,7	57,0 **56,6**
					(min-max)	(5,6–28,4)	(2,1–19,6)	(31–68,9)	(1,5–12)	(57,7–82)	(2–16,1)	(42 38,8–69,9)
	South east	n = 19	stem	n = 19	mean	**12,5**	5,1	**58,3**	2,9	**73,6**	3,1	**75,6**
					(min-max)	(5,2–27,9)	(0,7–14,4)	(14,3–89,5)	(0,5–6,3)	(36,9–93,4)	(0,5–7,2)	(54,3–91,4 91,3)
	Total ALL	n = 26	stem	n = 26	mean	**12,4**	5,3	58,4 **58,3**	3,3	71,5 **71,6**	3,8	70,6 **70,5**
					(min-max)	(5,2–28,4)	(0,7–19,6)	(14,3–89,5)	(0,5–12)	(36,9–93,4)	(0,5–16,1)	(42–91,4 38,8-91,3)
SCLESC	Maritime	n = 3	stem	n = 3	mean	**31,8**	15,2	**52,3**	16,4	**48,9**	14,0	**56,3**
					(min-max)	(30,3–34,2)	(11,9–18)	(42,1–60,9)	(13,7–20,5)	(40–56)	(10,6–18,6)	(45,5–65,8)
	South east	n = 6	stem	n = 6	mean	**28,8**	11,8	**75,0**	6,5	**87,2**	10,1	**80,1**
					(min-max)	(6–54)	(0–27)	(50–100)	(0–16)	(67,4–100)	(0–22,7)	(53,8–100)
	Total ALL	n = 9	stem	n = 9	mean	**29,8**	12,9	**67,4**	9,8	**74,4**	11,4	**72,2**
					(min-max)	(6–54)	(0–27)	(42,1–100)	(0–20,5)	(40–100)	(0–22,7)	(45,5–100)

Pathogen	EPPO zone climatic	No, of trials	Plant part (PP)	No, of assessm, per PP		Untreated infect	BAS 762% F BAS 762 02 F 0,6 L/ha infect	BAS 762% F BAS 762 02 F 0,6 L/ha efficacy	BAS 762% F BAS 762 02 F 1 L/ha infect	BAS 762% F BAS 762 02 F 1 L/ha efficacy	BAS 94880 F 1 L/ha infect	BAS 94880 F 1 L/ha efficacy
ALTEHE	**Maritime**	**n = 4**	leaf	**n = 2**	mean	**6,3**	2,8	**56,2**	2,7	**57,8**	3,8	**39,3**
					(min-max)	(6,2–6,3)	(2,4–3,2)	(49,6–62,8)	(2–3,3)	(47,6–67,9)	(2,2–5,4)	(13,4–65,2)
			stem	**n = 3**	mean	**9,9**	6,0	**39,6**	5,1	**48,3**	6,0	**39,5**
					(min-max)	(8,5–10,8)	(5,2–7,2)	(32,7–46,8)	(4,6–5,4)	(46,1–50,1)	(4,3–7,1)	(34,3–49,4)
	South east	**n = 24**	leaf	**n = 21**	mean	**19,6**	7,1	~~60,3~~ **60,4**	4,6	**76,4**	4,2	~~79,0~~ **79,1**
					(min-max)	(5–39,9)	(1–10,8)	(35–89,9)	(0–10,9)	(48,9–100)	(0–11,8)	(48,1–100)
			stem	**n = 7**	mean	**14,4**	5,6	**55,9**	3,2	**75,4**	3,8	**81,4**
					(min-max)	(5–27)	(2–11)	(29,1–69,5)	(0,4–7)	(39,7–94,2)	(0–9)	(65,7–100)
	Total ALL	**n = 28**	leaf	**n = 23**	mean	~~16,3~~ **18,4**	~~5,9~~ 6,7	~~53,1~~ **60,0**	~~3,9~~ 4,5	~~66,2~~ **74,8**	~~3,7~~ 4,1	~~66,9~~ **75,6**
					(min-max)	(5–39,9)	(1–10,8)	(35–89,9)	(0–10,9)	(47,6–100)	(0–11,8)	(13,4–100)
			stem	**n = 10**	mean	~~11,9~~ **13,1**	~~5,2~~ 5,7	~~46,4~~ **51**	~~3,4~~ 3,8	~~61,2~~ **67,3**	~~4,0~~ 4,5	~~62,6~~ **68,8**
					(min-max)	(5–27)	(2–11)	(29,1–69,5)	(0,4–7)	(39,7–94,2)	(0–9)	(34,3–100)

Table 3.2-28: Minimum Effective Dose, Sunflower, different diseases, <u>double application</u>, intensity of attack (infect and efficacy in %.

Pathogen	EPPO zone climatic	No, of trials	PP	No, of asses, per PP		UTC infect	BAS 762% F BAS 762 02 F 0,6 L/ha infect	BAS 762% F BAS 762 02 F 0,6 L/ha efficacy	BAS 762% F BAS 762 02 F 1 L/ha infect	BAS 762% F BAS 762 02 F 1 L/ha efficacy	BAS 762% F BAS 762 02 F 2x 0,6 L/ha infect	BAS 762% F BAS 762 02 F 2x 0,6 L/ha efficacy	BAS 762% F BAS 762 02 F 2x 1 L/ha infect	BAS 762% F BAS 762 02 F 2x 1 L/ha efficacy
DIAPHE	**Total ALL** (**South east** only)	**n = 1**	leaf	**n = 1**	mean (min-max)	**11,3** ~~(11,3–11,3)~~	4,3 ~~(4,3–4,3)~~	**62,2** ~~(62,2–62,2)~~	1,1 ~~(1,1–1,1)~~	~~90,3~~ **90,2** ~~(90,3–90,3)~~	1,4 ~~(1,4–1,4)~~	**87,4** ~~(87,4–87,4)~~	1,0 ~~(1–1)~~	**91,4** ~~(91,4–91,4)~~
LEPTLI	**Maritime**	**n = 1**	stem	**n = 1**	mean (min-max)	**7,2** ~~(7,2–7,2)~~	2,2 ~~(2,2–2,2)~~	**68,9** ~~(68,9–68,9)~~	1,9 ~~(1,9–1,9)~~	**73,3** ~~(73,3–73,3)~~	1,6 ~~(1,6–1,6)~~	**77,5** ~~(77,5–77,5)~~	1,5 ~~(1,5–1,5)~~	**79,3** ~~(79,3–79,3)~~
	South east	**n = 5**	stem	**n = 5**	mean (min-max)	**12,8** (5,2–27,9)	~~3,8~~ 3,7 (1–7,5)	**68,4** (24–81,4)	2,8 (1,1–6,3)	**72,9** (36,9–89,2)	1,8 (0,4–3,1)	**85,8** (69,1–93,2)	1,2 (0,4–2)	~~89,3~~ **89,2** (79,7–95,9)
	Total ALL	**n = 6**	stem	**n = 6**	mean (min-max)	**11,9** (5,2–27,9)	3,5 (1–7,5)	**68,5** (24–81,4)	2,7 (1,1–6,3)	**72,9** (36,9–89,2)	1,7 (0,4–3,1)	**84,4** (69,1–93,2)	1,3 (0,4–2)	**87,6** (79,3–95,9)
SCLESC	**Maritime**	**n = 1**	stem	**n = 1**	mean (min-max)	**31,0** ~~(31–31)~~	18,0 ~~(18–18)~~	**42,1** ~~(42,1–42,1)~~	13,7 ~~(13,7–13,7)~~	**56,0** ~~(56–56)~~	10,0 ~~(10–10)~~	**67,9** ~~(67,9–67,9)~~	14,3 ~~(14,3–14,3)~~	**54,0** ~~(54–54)~~
	South east	**n = 1**	stem	**n = 1**	mean (min-max)	**9,0** ~~(9–9)~~	0,0 ~~(0–0)~~	**100,0** ~~(100–100)~~	0,0 ~~(0–0)~~	**100,0** ~~(100–100)~~	0,0 ~~(0–0)~~	**100,0** ~~(100–100)~~	0,0 ~~(0–0)~~	**100,0** ~~(100–100)~~
	Total ALL	**n = 2**	stem	**n = 2**	mean (min-max)	**20,0** (9–31)	9,0 (0–18)	**71,0** (42,1–100)	6,8 (0–13,7)	**78,0** (56–100)	5,0 (0–10)	**84,0** (67,9–100)	7,1 (0–14,3)	**77,0** (54–100)
A	**Maritime**	**n = 1**	stem	**n = 1**	mean	**10,3**	5,5	**46,8**	5,3	**48,6**	5,5	**46,5**	4,1	**60,0**

Pathogen	EPPO zone climatic	No, of trials	PP	No, of asses, per PP		UTC	BAS 762% F BAS 762 02 F 0,6 L/ha		BAS 762% F BAS 762 02 F 1 L/ha		BAS 762% F BAS 762 02 F 2x 0,6 L/ha		BAS 762% F BAS 762 02 F 2x 1 L/ha	
						infect	infect	efficacy	infect	efficacy	infect	efficacy	infect	efficacy
					(min-max)	(10,3–10,3)	(5,5–5,5)	(46,8–46,8)	(5,3–5,3)	(48,6–48,6)	(5,5–5,5)	(46,5–46,5)	(4,1–4,1)	(60–60)
	South east	**n = 7**	leaf	**n = 7**	mean	**18,6**	12,2	**34,7**	10,6	**50,3**	4,4	**78,9**	3,7	**83,5**
					(min-max)	(5–25)	(3,3–25)	(0–61,3)	(0–25)	(0–100)	(0–9,1)	(62,6–100)	(0–8,4)	(65,6–100)
			stem	**n = 2**	mean	**5,4**	3,0	**43,0**	2,3	**55,9**	1,0	**82,2**	0,7	**87,0**
					(min-max)	(5–5,8)	(2,5–3,5)	(29,1–56,8)	(1,6–3)	(39,7–72,1)	(0,8–1,2)	(79,5–85)	(0,6–0,9)	(85,4–88,6)
	Total ALL	**n = 8**	leaf	**n = 7**	mean	**18,6**	12,2	**34,7**	10,6	**50,3**	4,4	**78,9**	3,7	**83,5**
					(min-max)	(5–25)	(3,3–25)	(0–61,3)	(0–25)	(0–100)	(0–9,1)	(62,6–100)	(0–8,4)	(65,6–100)
			stem	**n = 3**	mean	**7,0**	3,8	**44,2**	3,3	**53,5**	2,5	**70,3**	1,8	**78,0**
					(min-max)	(5–10,3)	(2,5–5,5)	(29,1–56,8)	(1,6–5,3)	(39,7–72,1)	(0,8–5,5)	(46,5–85)	(0,6–4,1)	(60–88,6)

PP=plant part

Wheat, *Oculimacula yallundae* ~~species~~

Altogether 19 field trials were carried out in order to determine the minimum effective dose for the control of *Oculimacula yallundae* ~~species~~ on winter wheat. Trials were conducted in years 2018 and 2019 in the Maritime climatic zone (the Czech Republic, Germany and France) and the North East climatic zone (Latvia, Lithuania and Poland). BAS 762 02 F was tested at ~~2~~ dose rates: 0,6 and 1 L/ha (6 trials conducted in 2019) and at dose rates: 0,7 and 1 L/ha (13 trials conducted in 2018). Crops were sprayed at growth stages ranging from BBCH 30-32.

Assessments were conducted on stems around BBCH 75 (ranging BBCH 73-77). The same assessments are presented in this chapter as later (with just full dose rate) in the main efficacy chapter.

Results are provided in Table 3.2-29a, 3.2-27b.

Higher performance of the full dose rate in comparison to reduced dose rates was observed in the vast majority of the trials. In 16 out of 19 trials the higher dose rate of 1 L/ha outperformed the reduced dose rates of 0,6 L/ha and 0,7 L/ha. In average of all trials across all climatic zones, the full dose rate resulted in ~~+14,2~~ +12,9 percentage to +14,7 percentage points above the reduced dose rates 0,6 L/ha and 0,7 L/ha respectively and was considerably more consistent in performance (unlike with the reduced dose rate the efficacy of the full dose rate did not drop down under 55%).The target dose rate of 1 L/ha is therefore considered as justified in wheat.

Conclusion

The proposed dose rate of 1 L/ha of BAS 762 02 F provided the optimum overall control and should be considered as the minimum effective dose to deliver optimum control of *Oculimacula yallundae* ~~species~~ on wheat under a wide range of environmental conditions.

~~**Table 3.2-29: Minimum Effective Dose, Wheat, OLIMSP, intensity of attack (infect and efficacy in %).**~~

EPPO			Untreated	BAS 762 02 F		BAS 762 02 F		BAS 9314 1 F		BAS 560 00 F	
Zone				0,6 L/ha		1 L/ha		0,8 L/ha		0,5 L/ha	
climatic			infect	infect	infect	infect	efficacy	infect	efficacy	infect	efficacy
Maritime	n=9	mean	26,3	12,4	**62,6**	9,1	**70,7**	12,0	**54,7**	10,3	**66,9**
		(min-max)	(6,5-66,4)	(1,3-40,8)	(36,6-85,3)	(0-27,3)	(55,7-100)	(2-33,5)	(16,3-81,4)	(1,3-32,3)	(51,3-87,8)
North east	n=10	mean	28,1	10,4	**59,8**	5,3	**79,4**	6,7	**70,0**	8,6	**64,6**
		(min-max)	(5,8-43,5)	(2,3-24,5)	(34,7-80,8)	(0,8-14,8)	(65,2-94,1)	(0,5-17,5)	(26,1-92,3)	(0,8-23,8)	(1,4-96,8)
Total ALL	n=19	mean	27,3	11,4	**61,1**	7,1	**75,3**	9,2	**62,8**	9,4	**65,7**

EPPO			Untreated	BAS 762 02 F		BAS 762 02 F		BAS 9314 1 F		BAS 560 00 F	
Zone				0,6 L/ha		1 L/ha		0,8 L/ha		0,5 L/ha	
climatic			infect	infect	infect	infect	efficacy	infect	efficacy	infect	efficacy
		(min-max)	(5,8-66,4)	(1,3-40,8)	(34,7-85,3)	(0-27,3)	(55,7-100)	(0,5-33,5)	(16,3-92,3)	(0,8-32,3)	(1,4-96,8)

Table 3.2-30a: Minimum Effective Dose, Wheat, PSDCHE, intensity of attack (infect and efficacy in %).

EPPO Zone climatic			Untreated infect	BAS 762 02 F 0,7 L/ha infect	BAS 762 02 F 0,7 L/ha efficacy	BAS 762 02 F 1 L/ha infect	BAS 762 02 F 1 L/ha efficacy	BAS 9314 1 F 0,8 L/ha infect	BAS 9314 1 F 0,8 L/ha efficacy	BAS 560 00 F 0,5 L/ha infect	BAS 560 00 F 0,5 L/ha efficacy
Maritime	**n=6**	mean	32,6	16,0	**61,7**	11,5	**69,9**	15,1	**53,2**	13,1	**67,4**
		(min-max)	(6,5-66,4)	(1,8-40,8)	(36,6-79,6)	(0-27,3)	(57,6-100)	(2-33,5)	(16,3-69,2)	(1,3-32,3)	(51,3-87,8)
North east	**n=7**	mean	25,6	9,0	**60,0**	4,0	**80,3**	7,4	**63,3**	7,6	**61,3**
		(min-max)	(5,8-42,3)	(2,3-24,5)	(34,7-80,8)	(0,8-9,0)	(65,2-94,1)	(0,5-17,5)	(26,1-92,3)	(1,5-17,0)	(1,3-86,1)
Total ALL	**n=13**	mean	28,8	12,2	**60,8**	7,5	**75,5**	11,0	**58,6**	10,1	**64,1**
		(min-max)	(5,8-66,4)	(1,8-40,8)	(34,7-80,8)	(0-27,3)	(57,6-100)	(0,5-33,5)	(16,3-92,3)	(1,5-32,3)	(1,3-87,8)

Table 3.2-31b: Minimum Effective Dose, Wheat, PSDCHE, intensity of attack (infect and efficacy in %).

EPPO Zone climatic			Untreated infect	BAS 762 02 F 0,6 L/ha infect	BAS 762 02 F 0,6 L/ha efficacy	BAS 762 02 F 1 L/ha infect	BAS 762 02 F 1 L/ha efficacy	BAS 9314 1 F 0,8 L/ha infect	BAS 9314 1 F 0,8 L/ha efficacy	BAS 560 00 F 0,5 L/ha infect	BAS 560 00 F 0,5 L/ha efficacy
Maritime	**n=3**	mean	13,8	5,4	**64,3**	4,0	**72,2**	5,8	**57,8**	4,8	**65,8**
		(min-max)	(8,5-17,5)	(1,3-8)	(47,5-85,3)	(1,3-6,8)	(55,7-85,3)	(2,5-12)	(21,3-81,4)	(3,0-8,0)	(55,7-77,0)
North east	**n=3**	mean	34,1	13,8	**59,4**	8,5	**77,2**	5,0	**85,6**	11,2	**72,2**
		(min-max)	(23,5-43,5)	(10-17,5)	(57,4-61,0)	(2,8-14,8)	(66,1-88,3)	(2,3-7,8)	(78-90,4)	(0,8-23,8)	(45,4-96,8)
Total ALL	**n=6**	mean	23,9	9,6	**61,8**	6,3	**74,7**	5,4	**71,7**	8,0	**69,0**
		(min-max)	(8,5-43,5)	(1,3-17,5)	(47,5-85,3)	(1,3-14,8)	(55,7-88,3)	(2,3-12)	(21,3-90,4)	(0,8-23,8)	(45,4-96,8)

Wheat, *Zymoseptoria tritici*

Altogether 11 field trials were carried out in order to determine the minimum effective dose for the control of *Zymoseptoria tritici* on winter wheat. Trials were conducted in years 2018 and 2019 in the Maritime climatic zone (the Czech Republic, France, Denmark, Germany and the United Kingdom) and the North East climatic zone (Poland). BAS 762 02 F was tested at 2 dose rates: 0,6 and 1 L/ha (5 trials conducted in 2019) and at dose rates: 0,7 and 1 L/ha (6 trials conducted in 2018). Crops were sprayed at growth stages ranging from BBCH 30-32.

Assessments were conducted on leaves at 20-52 days after the treatment. The same assessments are presented in this chapter as later (with just full dose rate) in the main efficacy chapter.

Results are provided in Table 3.2-32a, 3.2-28b.

Higher performance of the full dose rate in comparison to reduced dose rates was observed in the vast majority of the trials. In 9 out of 11 trials the higher dose rate of 1 L/ha outperformed the reduced dose rates of 0,6 L/ha or 0,7 L/ha. In average of all trials across all climatic zones, the full dose rate resulted in +10,9 +7,5% percentage to +13,8% percentage points above the reduced dose rates: 0,7 L/ha and 0,6 L/ha respectively and was considerably more consistent in performance (unlike with the reduced dose rate the efficacy of the full dose rate did not drop down under 55%).The target dose rate of 1 L/ha is therefore considered as justified in wheat.

Conclusion

The proposed dose rate of 1 L/ha of BAS 762 02 F provided the optimum overall control and should be considered as the minimum effective dose to deliver optimum control of *Zymoseptoria tritici* on wheat under a wide range of environmental conditions.

~~Table 3.2-32: Minimum Effective Dose, Wheat, SEPTTR, intensity of attack (infect and efficacy in %).~~

~~EPPO~~			~~Untreated~~	~~BAS 762 02 F~~		~~BAS 762 02 F~~		~~BAS 9314 1 F~~		~~BAS 560 00 F~~	
~~Zone~~				~~0,6 L/ha~~		~~1 L/ha~~		~~0,8 L/ha~~		~~0,5 L/ha~~	
~~climatic~~			~~infect~~	~~infect~~	~~infect~~	~~infect~~	~~efficacy~~	~~infect~~	~~efficacy~~	~~infect~~	~~efficacy~~
~~Maritime~~	~~n=8~~	~~mean~~	~~14,5~~	~~5,1~~	~~66,8~~	~~4,0~~	~~75,7~~	~~3,1~~	~~77,2~~	~~6,5~~	~~54,1~~
		~~(min-max)~~	~~(5,1-21,8)~~	~~(0-13,8)~~	~~(36,8-100)~~	~~(0-9,8)~~	~~(55,2-100)~~	~~(0-6,8)~~	~~(52,4-100)~~	~~(0,8-18,5)~~	~~(13,1-96,8)~~
~~North east~~	~~n=3~~	~~mean~~	~~11,3~~	~~5,1~~	~~65,8~~	~~2,9~~	~~82,0~~	~~5,4~~	~~70,2~~	~~6,2~~	~~57,1~~
		~~(min-max)~~	~~(6,2-21,3)~~	~~(0,9-12,5)~~	~~(41,2-86,2)~~	~~(0,3-7,5)~~	~~(64,7-95,3)~~	~~(0,4-15)~~	~~(29,4-93)~~	~~(1,1-15)~~	~~(29,4-82,2)~~
~~Total ALL~~	~~n=11~~	~~mean~~	~~13,6~~	~~5,1~~	~~66,5~~	~~3,7~~	~~77,4~~	~~3,7~~	~~75,3~~	~~6,4~~	~~54,9~~
		~~(min-max)~~	~~(5,1-21,8)~~	~~(0-13,8)~~	~~(36,8-100)~~	~~(0-9,8)~~	~~(55,2-100)~~	~~(0-15)~~	~~(29,4-100)~~	~~(0,8-18,5)~~	~~(13,1-96,8)~~

Table 3.2-33a: Minimum Effective Dose, Wheat, SEPTTR, intensity of attack (infect and efficacy in %).

EPPO			**Untreated**	**BAS 762 02 F**		**BAS 762 02 F**		**BAS 9314 1 F**		**BAS 560 00 F**	
Zone				**0,7 L/ha**		**1 L/ha**		**0,8 L/ha**		**0,5 L/ha**	
climatic			**infect**	**infect**	~~infect~~ **efficacy**	**infect**	**efficacy**	**infect**	**efficacy**	**infect**	**efficacy**
Maritime	**n=4**	mean	**12,7**	5,3	**64,4**	4,3	**69,7**	3,8	**69,5**	9,7	**28,5**
		(min-max)	(5,3-21,8)	(0-13,8)	(36,8-100)	(0-9,8)	(55,2-100)	(0-6,8)	(52,4-100)	(2,8-18,5)	(13,1-47,6)
North east	**n=1**	mean	**6,5**	2,0	**69,9**	0,9	**85,9**	0,8	**88,3**	2,6	**59,6**
		(min-max)	(6,5-6,5)	(2,0-2,0)	(69,9-69,9)	(0,9-0,9)	(85,9-85,9)	(0,8-0,8)	(88,3-88,3)	(2,6-2,6)	(59,6-59,6)
Total ALL	**n=5**	mean	**11,5**	4,6	**65,5**	3,6	**73,0**	3,2	**73,2**	8,2	**34,7**
		(min-max)	(5,3-21,8)	(0-13,8)	(36,8-100)	(0-9,8)	(55,2-100)	(0-6,8)	(52,4-100)	(2,6-18,5)	(13,1-59,6)

Table 3.2-34b: Minimum Effective Dose, Wheat, SEPTTR, intensity of attack (infect and efficacy in %).

EPPO			**Untreated**	**BAS 762 02 F**		**BAS 762 02 F**		**BAS 9314 1 F**		**BAS 560 00 F**	
Zone				**0,6 L/ha**		**1 L/ha**		**0,8 L/ha**		**0,5 L/ha**	
climatic			**infect**	**infect**	~~infect~~ **efficacy**	**infect**	**efficacy**	**infect**	**efficacy**	**infect**	**efficacy**
Maritime	**n=4**	mean	**16,3**	5,1	**69,2**	3,9	**81,8**	2,3	**84,9**	3,4	**79,7**
		(min-max)	(5,1-20,6)	(1,8-8,5)	(58,5-83,7)	(0,1-8,0)	(61,0-98,8)	(0,9-3,0)	(81,5-88,3)	(0,8-8,5)	(58,5-96,8)
North east	**n=2**	mean	**13,8**	6,7	**63,7**	3,9	**80,0**	7,8	**61,2**	8,1	**55,8**
		(min-max)	(6,2-21,3)	(0,8-12,5)	(41,2-86,2)	(0,3-7,5)	(64,7-95,3)	(0,5-15,0)	(29,4-93,0)	(1,1-15,0)	(29,4-82,2)
Total ALL	**n=6**	mean	**15,4**	5,6	**67,4**	3,9	**81,2**	4,1	**77,0**	4,9	**71,7**
		(min-max)	(5,1-21,3)	(0,8-12,5)	(41,2-83,7)	(0,1-8,0)	(61,0-98,8)	(0,5-15,0)	(29,4-93,0)	(0,8-15,0)	(29,4-96,8)

Table 3.2-35: MED, Overview all crop, single application, 1 L/ha, intensity of attack (infect and efficacy in %).

Crop		**EPPO**	**No,**	**Plant**	**No, of**		**UTC**	**BAS 762 02 F**		**BAS 762 02 F**	
Dose rate		**Zone**	**of trials**	**part**	**assessm,**			**lower dose rate: 0,6 L/ha**		**target dose rate: 1 L/ha**	
Disease		**Climatic**		**(PP)**	**per PP**		**infect**	**infect**	**efficacy**	**infect**	**efficacy**
Oilseed rape	**SCLESC**	**Total ALL**	**n=**~~52~~ **50**	leaf or stem		mean	~~22,1~~ **22,8**	~~5,9~~ 6,1	~~74,9~~ **74,8**	~~3,0~~ 3,1	~~87,2~~ **87,1**
						(min-max)	(~~4,3~~ 4,9-54,6)	(0-21,6)	(14,5-100)	(0-11,8)	(55,4-100)
	ALTESP	**MAR**	**n=5**	stem or pod		mean	**16,1**	5,7	**63,5**	4,4	**72,6**
						(min-max)	(8,6-25)	(3,67-10)	(51,6-77,1)	(1,3-10)	(55,4-100)
Sunflower	**DIAPHE**	**Total ALL**	**n = 15**	leaf	**n = 13**	mean	**12,1**	3,2	**76,8**	2,2	**87,4**
						(min-max)	(7,1–36,2)	(0,2–15)	(58,7–97,5)	(0–17,4)	(52–100)
				stem	**n = 5**	mean	~~17,8~~ **17,9**	3,9	**71,6**	2,5	~~83,8~~ **83,7**
						(min-max)	(5,8–51,2)	(1,3–6,7)	(56,7–87)	(0,7–5,4)	(72,2–89,4)
	LEPTLI	**Total ALL**	**n = 26**	stem	**n = 26**	mean	**12,4**	5,3	~~58,4~~ **58,3**	3,3	~~71,5~~ **71,6**
						(min-max)	(5,2–28,4)	(0,7–19,6)	(14,3–89,5)	(0,5–12)	(36,9–93,4)
	SCLESC	**Total ALL**	**n = 9**	stem	**n = 9**	mean	**29,8**	12,9	**67,4**	9,8	**74,4**
						(min-max)	(6–54)	(0–27)	(42,1–100)	(0–20,5)	(40–100)

Crop Dose rate Disease		EPPO Zone Climatic	No, of trials	Plant part (PP)	No, of assessm, per PP		UTC infect	BAS 762 02 F lower dose rate: 0,6 L/ha infect	 efficacy	BAS 762 02 F target dose rate: 1 L/ha infect	 efficacy
	ALTEHE	**Total ALL**	**n = 28 31**	leaf	**n = 23 26**	mean (min-max)	**16,3 18,6** (5–39,9)	5,9 8,2 (1–10,8 25)	**53,1 53,3** (35 5,6–89,9)	3,9 6,3 (0–10,9 25)	**66,2** (47,6 0–100)
				stem	**n = 10 11**	mean (min-max)	**11,9 13,4** (5–27)	5,2 6,8 (2–11 17,3)	**46,4** (29,1 0–69,5)	3,4 5,0 (0,4–7 17,9)	**61,2** (39,7 0–94,2)
Wheat	**PSDCHE**	**Total ALL**	**n = 19**	stem	**n = 19**	mean (min-max)	27,3 (5,8-66,4)	11,4 (1,3-40,8)	**61,1** (34,7-85,3)	7,1 (0-27,3)	**75,3** (55,7-100)
	SEPTTR	**Total ALL**	**n = 11**	leaf	**n = 11**	mean (min-max)	**13,6** (5,1-21,8)	5,1 (0-13,8)	**66,5** (36,8-100)	3,7 (0-9,8)	**77,4** (55,2-100)

PP=plant part

Table 3.2-36a: MED, Overview all crop, single application, 1 L/ha, intensity of attack (infect and efficacy in %).

Crop Dose rate Disease		EPPO Zone Climatic	No, of trials	Plant part (PP)	No, of assessm, per PP		UTC infect	BAS 762 02 F lower dose rate: 0,7 L/ha infect	 efficacy	BAS 762 02 F target dose rate: 1 L/ha infect	 efficacy
Wheat	**PSDCHE**	**Total ALL**	**n = 13**	stem	**n = 13**	mean (min-max)	28,8 (5,8-66,4)	12,2 (1,8-40,8)	**60,8** (34,7-80,8)	7,5 (0-27,3)	**75,5** (57,6-100)
	SEPTTR	**Total ALL**	**n = 5**	leaf	**n = 5**	mean (min-max)	**11,5** (5,3-21,8)	4,6 (0-13,8)	**65,5** (36,8-100)	3,6 (0-9,8)	**73,0** (55,2-100)

PP=plant part

Table 3.2-37b: MED, Overview all crop, single application, 1 L/ha, intensity of attack (infect and efficacy in %).

Crop Dose rate Disease		EPPO Zone Climatic	No, of trials	Plant part (PP)	No, of assessm, per PP		UTC infect	BAS 762 02 F lower dose rate: 0,6 L/ha infect	 efficacy	BAS 762 02 F target dose rate: 1 L/ha infect	 efficacy
Wheat	**PSDCHE**	**Total ALL**	**n = 6**	stem	**n = 6**	mean (min-max)	23,9 (8,5-43,5)	9,6 (1,3-17,5)	**61,8** (47,5-85,3)	6,3 (1,3-14,8)	**74,7** (55,7-88,3)
	SEPTTR	**Total ALL**	**n = 6**	leaf	**n = 6**	mean (min-max)	**15,4** (5,1-21,3)	5,6 (0,8-12,5)	**67,4** (41,2-83,7)	3,9 (0,1-8,0)	**81,2** (61,0-98,8)

PP=plant part

Summary and conclusions on the minimum effective dose

The dose response for BAS 762 02 F has been demonstrated with ~~136~~ 138 trials conducted in the target crops in which the performances of the target dose rate and a reduced dose rates (60% and 70% of the target) were compared. An overview is provided in

Table 3.2-33a: **Minimum Effective Dose, Wheat, SEPTTR, intensity of attack (infect and efficacy in %).**

EPPO Zone climatic			Untreated infect	BAS 762 02 F 0,7 L/ha infect	 ~~infect~~ efficacy	BAS 762 02 F 1 L/ha infect	 efficacy	BAS 9314 1 F 0,8 L/ha infect	 efficacy	BAS 560 00 F 0,5 L/ha infect	 efficacy
Maritime	**n=4**	mean (min-max)	**12,7** (5,3-21,8)	5,3 (0-13,8)	**64,4** (36,8-100)	4,3 (0-9,8)	**69,7** (55,2-100)	3,8 (0-6,8)	**69,5** (52,4-100)	9,7 (2,8-18,5)	**28,5** (13,1-47,6)
North east	**n=1**	mean (min-max)	**6,5** (6,5-6,5)	2,0 (2,0-2,0)	**69,9** (69,9-69,9)	0,9 (0,9-0,9)	**85,9** (85,9-85,9)	0,8 (0,8-0,8)	**88,3** (88,3-88,3)	2,6 (2,6-2,6)	**59,6** (59,6-59,6)
Total ALL	**n=5**	mean	**11,5**	4,6	**65,5**	3,6	**73,0**	3,2	**73,2**	8,2	**34,7**

EPPO Zone climatic		Untreated infect	BAS 762 02 F 0,7 L/ha infect	BAS 762 02 F 0,7 L/ha efficacy	BAS 762 02 F 1 L/ha infect	BAS 762 02 F 1 L/ha efficacy	BAS 9314 1 F 0,8 L/ha infect	BAS 9314 1 F 0,8 L/ha efficacy	BAS 560 00 F 0,5 L/ha infect	BAS 560 00 F 0,5 L/ha efficacy
	(min-max)	(5,3-21,8)	(0-13,8)	(36,8-100)	(0-9,8)	(55,2-100)	(0-6,8)	(52,4-100)	(2,6-18,5)	(13,1-59,6)

Table 3.2-34b: Minimum Effective Dose, Wheat, SEPTTR, intensity of attack (infect and efficacy in %).

EPPO Zone climatic		Untreated infect	BAS 762 02 F 0,6 L/ha infect	BAS 762 02 F 0,6 L/ha efficacy	BAS 762 02 F 1 L/ha infect	BAS 762 02 F 1 L/ha efficacy	BAS 9314 1 F 0,8 L/ha infect	BAS 9314 1 F 0,8 L/ha efficacy	BAS 560 00 F 0,5 L/ha infect	BAS 560 00 F 0,5 L/ha efficacy
Maritime	**n=4** mean	**16,3**	5,1	**69,2**	3,9	**81,8**	2,3	**84,9**	3,4	**79,7**
	(min-max)	(5,1-20,6)	(1,8-8,5)	(58,5-83,7)	(0,1-8,0)	(61,0-98,8)	(0,9-3,0)	(81,5-88,3)	(0,8-8,5)	(58,5-96,8)
North east	**n=2** mean	**13,8**	6,7	**63,7**	3,9	**80,0**	7,8	**61,2**	8,1	**55,8**
	(min-max)	(6,2-21,3)	(0,8-12,5)	(41,2-86,2)	(0,3-7,5)	(64,7-95,3)	(0,5-15,0)	(29,4-93,0)	(1,1-15,0)	(29,4-82,2)
Total ALL	**n=6** mean	**15,4**	5,6	**67,4**	3,9	**81,2**	4,1	**77,0**	4,9	**71,7**
	(min-max)	(5,1-21,3)	(0,8-12,5)	(41,2-83,7)	(0,1-8,0)	(61,0-98,8)	(0,5-15,0)	(29,4-93,0)	(0,8-15,0)	(29,4-96,8)

Table 3.2-35, 3.2-29a and 3.2-29b.

In summary, according to the presented results, BAS 762 02 F at the targeted dose rate of 1 L/ha provided the optimum and most consistent control and should be considered as the minimum effective dose rate in oilseed rape, sunflower and wheat under a wide range of environmental conditions.

Nevertheless, it was observed that there were also conditions and disease pressures under which even the reduced dose rate of the product led to a satisfying performance. Therefore, the farmer should have the possibility to apply a lower dose rate. Detailed information concerning the need for a dose rate range in certain countries is given in separate chapter.

Comments of zRMS on:
Minimum effective dose tests (3.2.2)

Results from 138 efficacy trials conducted in the years 2018 and 2019 in Maritime (MAR), North-East(NE) and South-East (SE) EPPO zone have been presented to prove that the recommended dose 1 L/ha is the minimum necessary for effective control of target diseases. Seven pathogens: *Sclerotinia sclerotiorum* on oilseed rape, *Diaporthe helianthi*, *Plenodomus lindquistii*, *Sclerotinia sclerotiorum*, *Alternaria helianthi* on sunflower and *Oculimacula yallundae*, *Zymoseptoria tritici* on wheat were selected for Minimum Effective Dose (MED) evaluation. The trials were carried out with the BAS 762 02 F or its earlier version BAS 762 00 F, for which similarity has been demonstrated in a range of bridging trials presented in a separate chapter (Preliminary tests (3.2.1)). For simplification, only the code name BAS 762 02 F will be used in the assessment. BAS 762 02 F was tested at the recommended dose rate of 1 L/ha and at lower dose rates: 0,6 L/ha or 0,7 L/ha (60-70% of the target dose rate). Two lower dose rates: 0,6 L/ha and 0,7 L/ha were tested only in winter wheat trials. In the remaining trials carried out in winter oilseed rape and sunflower only one lower dose rate of 0,6 L/ha was applied. BAS 9488 0 F at dose rate of 1 L/ha was used as reference product in the trials carried out in oilseed rape and in sunflower. In the trials conducted in winter wheat BAS 9314 1 F at dose rate of 0,8 L/ha and BAS 560 00 F at dose rate of 0,5 L/ha were used as standards.

SCLESC/BRSNW (50 trials) (Tables: 3.2-24, 3.2-29)

The dose response was observed for increasing dose rate in MAR, NE and SE EPPO zone. Much clearer dose response was visible in NE and SE zone. The difference in efficacy was about 7% , 14% and 18%, in favor of the recommended dose, comparing the highest recommended dose rate of 1 L/ha with the 0,6 L/ha dose rate in MAR, NE and SE EPPO zone respectively. The average increase in effectiveness for all zones was about 12% in favor of the dose rate of 1 L/ha. The average efficacy of standard was comparable to the efficacy of BAS 762 02 F at recommended dose rate of 1 L/ha.

ALTESP/BRSNW (5 trials) (Table 3.2-24a, 3-2-29)

The dose response was observed for increasing dose rate in MAR EPPO zone. The difference in efficacy was 9%, in favour of the recommended dose, comparing the highest recommended dose rate of 1 L/ha with the 0,6 L/ha dose rate. The average efficacy of standard was comparable to the efficacy of BAS 762 02 F at recommended dose rate of 1 L/ha.

DIAPHE/HELAN – single application (15 trials) (Tables: 3.2-25, 3.2-29)

The trials were carried out in MAR and SE EPPO zones and the assessments were made on stems or leaves. The dose response was visible in both EPPO zones (much clearer in SE zone) in most of the assessments. The average efficacy was higher by about 6% or 14%, for the recommended dose rate of 1 L/ha compared to 0,6 L/ha dose rate of BAS 762 02 F on stems in MAR and SE zone respectively. While on the leaves the average increase of the efficacy was 12% in favor of recommended dose rate of 1 L/ha in SE zone. In Maritime zone the efficacy increase (about 7%) was noted for lower dose rate of 0,6 L/ha on leaf, but this result seems to be unreliable due to only 1 trial carried out in FR. The average increase in effectiveness for all zones was about 11% and 12% in favor of the dose rate of 1 L/ha for leaves or stems respectively. The average efficacy of standard was lower or on the similar level compared to the fungicide BAS 762 02 F at 1 L/ha in MAR and SE zone respectively, and comparable when looking at the results from both zones altogether.

DIAPHE/HELAN –double application (1 trial) (Tables: 3.2-26, 3.2-29)

Results from 1 trial conducted in SE zone (SK) have been presented. The average efficacy was higher by about 4% in favor of double application of BAS 762 02 F at dose rate 1 L/ha respectively. The increase of efficacy for the tested fungicide applied once at dose rate of 1 L/ha was about 28% compared to lower dose rate of 0,6 L/ha in this single trial.

LEPTLI/HELAN – single application (26 trials) (Tables: 3.2-25, 3.2-29)

The dose response was observed for increasing dose rate in MAR and SE EPPO zone (much clearer in SE zone). The difference in efficacy was about 8% , 15% in favor of the recommended dose, comparing the dose rate of 1 L/ha with the 0,6 L/ha dose rate in MAR and SE EPPO zone respectively. The average increase in effectiveness for both zones was about 13% in favor of the dose rate of 1 L/ha. Efficacy of standard was comparable to the efficacy of BAS 762 02 F at recommended dose rate of 1 L/ha. The average efficacy of reference product was lower or on the similar level compared to the tested fungicide in MAR and SE zone respectively, and comparable when looking at the results from both zones altogether.

LEPTLI/HELAN – double application (6 trials) (Tables: 3.2-26, 3.2-29)

The average efficacy was higher by about 2%, 3% and 3%, for double application of BAS 762 02 F at dose rate of 1 L/ha compared to double application of tested fungicide at 0,6 in MAR and SE and total results from both zones respectively. The increase of efficacy for the tested fungicide applied once at dose rate of 1 L/ha in these trials was about 4% each time compared to lower dose rate of 0,6 L/ha in MAR, SE and both zones respectively.

SCLESC/HELAN – single application (9 trials) (Tables: 3.2-25, 3.2-29)

The dose response was observed for increasing dose rate in SE EPPO zone. The difference in efficacy was about 12% in favour of the recommended dose rate of 1 L/ha, comparing the dose rate of 1 L/ha with the 0,6 L/ha dose rate. In Maritime zone, results from three trials show about 3% increase of the BAS 762 02 F efficacy applied at 0,6 L/ha compared to higher dose rate of 1 L/ha, but the average efficacy was on the similar level comparing two dose rate 0,6 L/ha with 1 L/ha in this zone (in the range of 40-60%). The average increase in effectiveness for both zones was about 7% in favor of the dose rate of 1 L/ha. The efficacy of the reference product was higher, lower or comparable to the average efficacy of BAS 762 02 at dose rate of 1,0 l/h when looking at the results from MAR, SE and both zones respectively.

SCLESC/HELAN – double application (2 trials) (Tables: 3.2-26, 3.2-29)

In Maritime zone results from only 1 trial show about 14% increase of the efficacy for BAS 762 02 F applied twice at 0,6 l/.ha compared to tested fungicide applied twice at 1 L/ha. These results seems to be unreliable due to only one trial carried out this zone. Efficacy results from only 1 trial carried out in SE zone are the same independently of the tested dose rate and number of applications.

ALTEHE/HELAN – single application (28 trials) (Tables: 3.2-25, 3.2-29)

The trials were carried out in MAR and SE EPPO zones and the assessments were made on stems or leaves. The dose response was visible in both EPPO zones (much clearer in SE zone) on stems. The average efficacy was higher by about 9% and 20% for the recommended dose rate of 1 L/ha compared to 0,6 L/ha dose rate of BAS 762 02 on stems in MAR and SE zone respectively. While on the leaves the average increase of the efficacy was about 16% in favor of the recommended dose rate of 1 L/ha in SE zone. The average increase in effectiveness for all zones was about 16% and 15% in favor of the dose rate of 1 L/ha for stems and leaves respectively. Efficacy of standard was lower in MAR zone or on the similar level as efficacy of BAS 762 02 F at recommended dose rate of 1 L/ha in SE zone and both zones altogether.

ALTEHE/HELAN – double application (8 trials) (Table 3.2-26)

The dose response was observed for increasing dose rate in MAR and SE EPPO zones. In Maritime zone about 5% increase of the efficacy for BAS 762 02 F applied twice at 1 L/ha was recorded on the leaves compared to the tested fungicide applied twice at 0,6 L/ha. The average efficacy observed on stems was higher by about 14%, 5% and 8%, for double application of BAS 762 02 F at dose rate of 1 L/ha compared to double application of tested fungicide at 0,6 in MAR, SE and both zones respectively. The increase of efficacy for the tested fungicide applied once at dose rate of 1 L/ha was about 2%, 13% and 9%, compared to lower dose rate of 0,6 L/ha on stems in MAR, SE and both zones respectively. On the leaves results from SE zone indicate about 16% increase in favor of single application of BAS 762 02 F at dose rate of 1 L/ha.

PSDCHE/TRZAW (19 trials) (Tables: 3.2-27a, 3.2-27b)
The dose response was observed for increasing dose rate in MAR and NE EPPO zone. Much clearer dose response was visible in NE zone. The difference in efficacy was about 8% ,18%-20% in favor of the recommended dose, comparing the highest recommended dose rate of 1 L/ha with the 0,6 L/ha or 0,7 L/ha dose rate in MAR and NE EPPO zone respectively. The average increase in effectiveness for all zones was about 13%-15% in favor of the dose rate of 1 L/ha. The average efficacy of reference products was mostly lower than the efficacy of BAS 762 02 F at recommended dose rate of 1 L/ha.
SEPTTR/TRZAW (11 trials) (Tables: 3.2-28a, 3.2-28b)
The trials were carried out in MAR and NE EPPO zones. The dose response was visible in both EPPO zones but much clearer in NE zone, similarly as for PSDCHE control. The average efficacy was higher by about 5%-13% or 16%, for the recommended dose rate of 1 L/ha compared to 0,6 L/ha or 0,7 L/ha dose rate of BAS 762 02 F in MAR and NE zone respectively. The average increase in effectiveness for all zones was about 8%-14% in favor of the dose rate of 1 L/ha. The average efficacy of reference products was similar or lower, compared to the efficacy of BAS 762 02 F at recommended dose rate of 1 L/ha..

Based on the submitted trial results the Minimum Effective Dose rate of the BAS 762 02 F – 1 L/ha can be considered justified.

3.2.3 Efficacy tests (KCP 6.2)

Information on trials submitted in Oilseed rape

Between 2018 and ~~2019~~ 2020, altogether ~~102~~ 110 efficacy trials with sufficient infestation level (5%) were carried out to prove the fungicidal efficacy of BAS 762 02 F in oilseed rape. The trials were conducted in the Czech Republic, Denmark, France, Germany, United Kingdom and Sweden (Maritime zone), Latvia, Lithuania and Poland (North-East zone) and Hungary, Romania and Slovakia (South-East zone). The distribution of trials by country and year and by EPPO zone is provided in Table 3.2-38 and

Table 3.2-39.

Product at target dose rate of 1 L/ha was applied ~~according to the GAP~~ once within the BBCH stage ranging from ~~57~~ 31 to 75.

BAS 9488 0 F known as Propulse at the dose rate of 1 L/ha (fluopyram 125 g/L +prothioconazole 125 g/L) was used as a reference product.

As already mentioned in the introduction chapter, the majority of oilseed rape grown in Europe is winter oilseed rape. The spring oilseed rape is of importance in the regions of Northern Europe with long harsh winters and extended day lengths during summer. Spring oilseed rape stays on the ground for 120-150 days and this is one ~~on~~ of the most importance differences ~~between~~ from winter cultivar, where the vegetation period exceeds 300 days. Anyhow, in case of *Sclerotinia sclerotiorum*, which is the main disease controlled during the flowering period, the risk of infection is similar for winter and spring oilseed rape and depends on the amount of spore production during flowering and the occurrence of suitable weather for petals to stick to the leaves. This allows to assume that the effectiveness of the fungicide treatment will be similar for both types of crops. Following this fact and considering the importance and distribution of winter and spring oilseed rape, the trials were conducted with the winter cultivar of oilseed rape (BRSNW). However, the registration is claimed for both winter and spring cultivars (BRSNN).

Table 3.2-38: Distribution of trials by location and year; Oilseed rape

Crop	EPPO Zone	Country	Year			TOTAL
			2018	2019	2020	per country
Oilseed Rape	Maritime	CZ	7	15	2	~~22~~ **24**
		DE		5	4	~~5~~ **9**
		DK		~~1~~	1	**1**
		FR	4	12	2	~~16~~ **18**
		SE		1		**1**

Crop	EPPO Zone	Country	Year			TOTAL
			2018	2019	2020	per country
	North East	LT	1			**1**
		LV	~~2~~	~~3~~ 1	1	~~5~~ **2**
		PL	8	9	2	~~17~~ **19**
	South East	HU	4	3		**7**
		RO	8	6		**14**
		SK	3	6	1	~~9~~ **10**
	Mediterranean	FR		4		**4**
Total						~~102~~ **110**

Table 3.2-39: Distribution of trials by EPPO zone; Oilseed rape

Crop	EPPO Zone	TOTAL per zone
BRSNW	Maritime	~~45~~ 53
	North East	~~23~~ 22
	South East	~~30~~ 31
	Mediterranean	4
TOTAL ALL		~~102~~ **110**

Sclerotinia sclerotiorum, Oilseed rape

A set of 9 trials was conducted in 2019 in order to compare different application timings within the relatively broad application window and cover all growth stages at application requested in the GAP. This allows the farmer to apply the product according his needs.
Trials were located in the Czech Republic, France, Sweden, Latvia, Poland, Hungary and Slovakia. ~~Tested were~~ Three different application timings were tested: BBCH 55-59, BBCH 61-65 and BBCH 71-75.

8 out of 9 trials confirmed the application at flowering (range BBCH 61-65) as the most effective. Nevertheless, also the early and the late application timing show good efficacy against *Sclerotinia sclerotiorum*. That allows to conclude that the best timing for application is in BBCH 61-65, but in exceptional cases (diseases, weather conditions at application), where a later application is needed to treat against *Alternaria* spp. and *Sclerotinia* at the same time still satisfying efficacy is proven.

Summary of results is provided in

Table 3.**2-40**.

Table 3.2-40: Efficacy, Oilseed rape, SCLESC, different application timings, intensity of attack (infect and efficacy in %).

EPPO Zone climatic			Untreated	BAS 762 02 F, 1 L/ha					
				BBCH 55-59		BBCH 61-65		BBCH 71-75	
			infect	infect	~~infect~~ efficacy	infect	efficacy	infect	efficacy
Maritime	**n = 4**	mean	**22,9**	8,8	**65,5**	~~2,6~~ 2,7	**90,9**	13,3	**47,9**
		(min-max)	(4,6-34,3)	(1-15,3)	(50,4-78)	(0-6,3)	(81,8-100)	(2-31)	(9,5-71,3)
North east	**n = 3**	mean	**21,5**	5,2	**77,8**	3,5	**83,3**	8,5	**60,7**
		(min-max)	(7,2-33)	(1,4-9,5)	(71,2-81,1)	(1,3-5,5)	(81,8-84,8)	(2,7-11,8)	(54,8-64,4)
South east	**n = 2**	mean	**29,0**	12,9	**55,3**	10,7	**68,0**	10,3	**55,1**
		(min-max)	(13,3-44,7)	(6-19,7)	(54,7-56)	(3-18,5)	(58,7-77,4)	(8,3-12,4)	(37,7-72,4)
Total ALL	**n = 9**	mean	**23,8**	8,5	**67,3**	4,7	**83,3**	11,0	**53,7**
		(min-max)	(4,6-44,7)	(1-19,7)	(50,4-81,1)	(0-18,5)	(58,7-100)	(2-31)	(9,5-72,4)

For further evaluation of efficacy on *Sclerotinia sclerotiorum* and also for information on yield from these efficacy trials, always the application timing with the best efficacy is considered.

A total of ~~81~~ 87 trials showed sufficient level of infestation to evaluate the efficacy of BAS 762 02 F against *Sclerotinia sclerotiorum* in oilseed rape. Crops at growth stages ranging from BBCH 61-73 were sprayed with 1 L/ha of BAS 762 02 F. Trials were conducted in 2018, ~~and~~ 2019 and 2020 in the Maritime climatic zone (the Czech Republic, France, Germany and Sweden), the North East climatic zone (Latvia, Lithuania

and Poland) and the South East climatic zone (Hungary, Romania and Slovakia).

Summary of results is provided in Table 3.2-41.

Assessments on stems or leaves around BBCH 85 (ranging BBCH 79-89) with min 5% infection threshold in untreated were chosen for evaluation. 4 2 trials with infection in untreated between amounting to 4,3-4,6-4,9% have been included in evaluation as well.

A significant reduction of *Sclerotinia sclerotiorum* was achieved in all trials across all three EPPO zones. The summary across all three EPPO zones showed that the mean infestation of 25,1 26,4% in the untreated was reduced with BAS 762 02 F by 84,2 83,7%. The performance of the product was comparable to the standard (81,7 80,8%).

Conclusion

According to the trial results, it can be concluded that application of BAS 762 02 F at 1 L/ha around flowering controls *Sclerotinia sclerotiorum* in oilseed rape under a wide range of agroclimatic conditions.

Table 3.2-41: Efficacy, Oilseed rape, SCLESC, intensity of attack (infect and efficacy in %).

EPPO Zone climatic			Untreated	BAS 762 02 F 1 L/ha		BAS 9488 0 F 1 L/ha	
			infect	infect	efficacy	infect	efficacy
Maritime	n=33	mean	29,5	6,3	83,8	7,4	82,1
		(min-max)	(4,3-95,3)	(0-36,5)	(51,6-100)	(0-65,8)	(30,9-100)
North east	n=18	mean	20,3	4,0	81,7	4,8	79,7
		(min-max)	(7,2-43)	(0-11,8)	(66,2-100)	(0-14,3)	(53,8-100)
South east	n=30	mean	23,3	3,5	86,2	4,4	82,5
		(min-max)	(6-51,2)	(0-12,9)	(65,8-100)	(0-23,1)	(48,4-100)
Total ALL	n=81	mean	25,1	4,7	84,2	5,7	81,7
		(min-max)	(4,3-95,3)	(0-36,5)	(51,6-100)	(0-65,8)	(30,9-100)

Table 3.2-42: Efficacy, Oilseed rape, SCLESC, intensity of attack (infect and efficacy in %).

EPPO Zone climatic			Untreated	BAS 762 02 F 1 L/ha		BAS 9488 0 F 1 L/ha	
			infect	infect	efficacy	infect	efficacy
Maritime	**n=36**	mean	**32,5**	7,2	**82,2**	8,6	**80,7**
		(min-max)	(4,6-95,3)	(0-36,5)	(40,6-100)	(0-65,8)	(30,9-100)
North east	**n=20**	mean	**21,0**	4,1	**82,3**	4,7	**80,5**
		(min-max)	(7,2-43)	(0-11,8)	(66,2-100)	(0-14,3)	(53,8-100)
South east	**n=31**	mean	**22,8**	3,4	**86,5**	4,3	**81,3**
		(min-max)	(6-51,2)	(0-12,9)	(65,8-100)	(0-23,1)	(48,4-100)
Total ALL	**n=87**	mean	**26,4**	5,1	**83,7**	6,2	**80,8**
		(min-max)	(4,6-95.3)	(0-36,5)	(40,6-100)	(0-65,8)	(30,9-100)

Alternaria species, Oilseed rape

Alternaria brassicae on oilseed rape is a disease which appears later than *Sclerotinia* in the cycle of the crop. Thus, an optimal application for this disease would be more at stage BBCH 69-75. However, in practice, most of applications and products registered on *Sclerotinia* and applied at BBCH stage 63-65 are able to control *Alternaria*. There is a number of trials available on *Alternaria* species and presented in this dossier.

A total of ~~18~~ 16 trials showed sufficient level of infestation to evaluate the efficacy of BAS 762 02 F against *Alternaria* species in oilseed rape. 7 trials with infection in untreated between 1,7-3,9% have not been included in evaluation.

Crops at growth stages ranging from BBCH 55-73 were sprayed with 1 L/ha of BAS 762 02 F. Trials were conducted in 2018, ~~and~~ 2019 and 2020 in the Maritime climatic zone (the Czech Republic, Denmark, Germany and France), the North East climatic zone (Latvia~~, Lithuania~~ and Poland) and the South East climatic zone (Hungary).

Summary of results is provided in Table 3.2-43 ~~and~~

~~Table 3.2-44.~~

The pathogen was assessed as *Alternaria brassicae* or generally as *Alternaria* species. Assessments on pods, stems, leaves or whole plant around BBCH 85 (ranging BBCH 80-89). ~~Due to lower occurrence of *Alternaria* infection within the trials especially in the North East climatic zone, also trials with infection in untreated below 5% threshold were included in the evaluation. 1.5% *Alternaria* infection in the untreated was considered as a threshold (min 1.7% occurred in the trials). For transparency, 2 summary tables are available: the first for threshold 1.5% and the second for threshold 5%. It is obvious that the inclusion of trials with lower infection levels does not have considerable influence on the mean values and the consistence of results.~~

A significant reduction of *Alternaria* species was achieved in all trials across ~~all~~ three EPPO zones. The summary across all three EPPO zones showed that the mean infestation of ~~12.1~~ 26,5% in the untreated was reduced with BAS 762 02 F by ~~72~~ 71,6%. The performance of the product was comparable to the standard (~~73.6~~ 72,3%).

In the South East climatic zone, the disease occurred just in 1 trial. The explanation for this low incidence is that *Alternaria* requires humidity after flowering which is not always the case in the South East zone. Nevertheless, as soon as the disease occurs it can become a problem under favourable conditions (as more often present in the Maritime and North East zones). Considering the sufficient data package from the other two zones it can be extrapolated that also sufficient efficacy can be expected in case of severe outbreaks in countries of the South East EPPO zone. This assumption is supported by one Hungarian trial in which BAS 762 02 F showed high efficacy.

In addition, it is referred to the existing registrations of product Cantus containing solo boscalid. Cantus is registered for use on *Alternaria brassicae* in many European countries. Out of the concerned member states of the South East EPPO zone, the registration on *Alternaria brassicae* exists in Romania at the dose rate ranging~~e of~~ from 0, 2 to 0,5 L/ha and in Hungary at 0,3-0,5 L/ha. These rates correspond to 100-250 and

150-250 grams of boscalid per hectare respectively. The intended dose rate range of BAS 762 02 F for the countries of the South East EPPO zone is 0,6-1 L/ha which corresponds to 120-200 grams of boscalid per hectare. It is obvious that the ranges overlap each other largely and that the amount of boscalid delivered with the lowest dose rate of BAS 762 02 F is even slightly higher than the amount delivered by the lowest dose rate in Romania.
The applicant further refers to BAS 750 11 F that has been submitted to zRMS Austria in 2019 and is currently under review. BAS 750 11 F contains solo mefentrifluconazole and at the maximum dose rate it delivers 150 g of the active substance per hectare. A solid data set concerning the performance of BAS 750 11 F on *Alternaria* species in oilseed rape has been provided and the efficacy has been proven in the South East zone.
It is therefore referred to the above mentioned products containing one or the other single active ingredient for that the efficacy on *Alternaria* species in oilseed rape has been proven.

Conclusion

According to the trial results, it can be concluded that application of BAS 762 02F at 1 L/ha around flowering controls *Alternaria* species in oilseed rape under a wide range of agroclimatic conditions.

Table 3.2.43: Efficacy, Oilseed rape, ALTESP, intensity of attack (infect and efficacy in %), threshold 1,5%; summary.

EPPO Zone climatic			Untreated	BAS 762 02 F 1 L/ha		BAS 9488 0 F 1 L/ha	
			infect	infect	efficacy	infect	efficacy
Maritime	n = 10	mean (min-max)	14,3 (3,8-25)	4,1 (0,3-10)	72,0 (48,7-93,3)	3,1 (0-7,5)	79,6 (67,7-100)
North east	n = 7	mean (min-max)	9,8 (1,7-35)	3,9 (0,5-20,8)	69,1 (40,7-85,6)	4,3 (0,6-23)	62,2 (34,3-86,9)
South east	n = 1	mean (min-max)	5,1	0,4	92,4	0,4	92,4
Total ALL	n = 18	mean (min-max)	12,1 (1,7-35)	3,8 (0,3-20,8)	72,0 (40,7-93,3)	3,4 (0-23)	73,6 (34,3-100)

Table 3.2.44: Efficacy, Oilseed rape, ALTESP, intensity of attack (infect and efficacy in %), threshold 5%; summary.

EPPO Zone climatic			Untreated	BAS 762 02 F 1 L/ha		BAS 9488 0 F 1 L/ha	
			infect	infect	efficacy	infect	efficacy
Maritime	n = 8	mean (min-max)	16,9 (8,6-25)	4,9 (1,3-10)	72,2 (60-91,7)	3,7 (1,8-7,5)	78,6 (70-87,7)
North east	n = 2	mean (min-max)	28,8 (22,6-35)	12,0 (3,3-20,8)	63,2 (40,7-85,6)	13,0 (3-23)	60,6 (34,3-86,9)
South east	n = 1	mean (min-max)	5,1 -	0,4 -	92,4 -	0,4 -	92,4 -
Total ALL	n = 11	mean (min-max)	18,0 (5,1-35)	5,8 (0,4-20,8)	72,4 (40,7-92,4)	5,1 (0,4-23)	76,6 (34,3-92,4)

Table 3.2-34: Efficacy, Oilseed rape, ALTESP, intensity of attack (infect and efficacy in %), threshold 5%; summary

EPPO Zone climatic			Untreated	BAS 762 02 F 1 L/ha		BAS 9488 0 F 1 L/ha	
			infect	infect	efficacy	infect	efficacy
Maritime	**n = 12**	mean	**29,3**	7,4	**71,1**	9,2	**72,0**
		(min-max)	(8,6-76)	(1,3-15,8)	(40,6-91,7)	(1,8-35,5)	(38,8-87,7)
North east	**n = 3**	mean	**22,4**	8,9	**66,8**	9,4	**66,4**
		(min-max)	(9,7-35)	(2,5-20,8)	(40,7-85,6)	(2,1-23)	(34,3-86,9)
North east including MAR trials*	**n 10**	mean	**34,8**	8,9	**74,8**	12,2	**69,5**
		(min-max)	(9,7-76)	(1,3-20,8)	(40,7-91,7)	(2-35,5)	(38,8-87,5)
South east	**n = 1**	mean	**5,1**	0,4	**92,4**	0,4	**92,4**
		(min-max)					
Total ALL	**n = 16**	mean	**26,5**	7,2	**71,6**	8,7	**72,3**
		(min-max)	(5,1-76)	(0,4-20,8)	(40,6-92,4)	(0,4-35,5)	(34,3-92,4)

*trials from CZ and DE

Erysiphe cruciferarum, Oilseed rape

A total of 12 trials showed sufficient level of infestation to evaluate the efficacy of BAS 762 02 F against *Erysiphe cruciferarum* in oilseed rape.

Crops at growth stages ranging from BBCH 61-67 were sprayed with 1 L/ha of BAS 762 02 F. Trials were conducted in 2018 and 2019.

8 trials are submitted from the climatic zones that are usually relevant for CEU registration zone - 4 trials from the Maritime climatic zone (the Czech Republic and France) and 4 trials from the North East climatic zone (Poland).

In addition, 4 French trials located in the Mediterranean climatic zone are submitted in support of the evaluation.

The map of the trial locations is provided below.

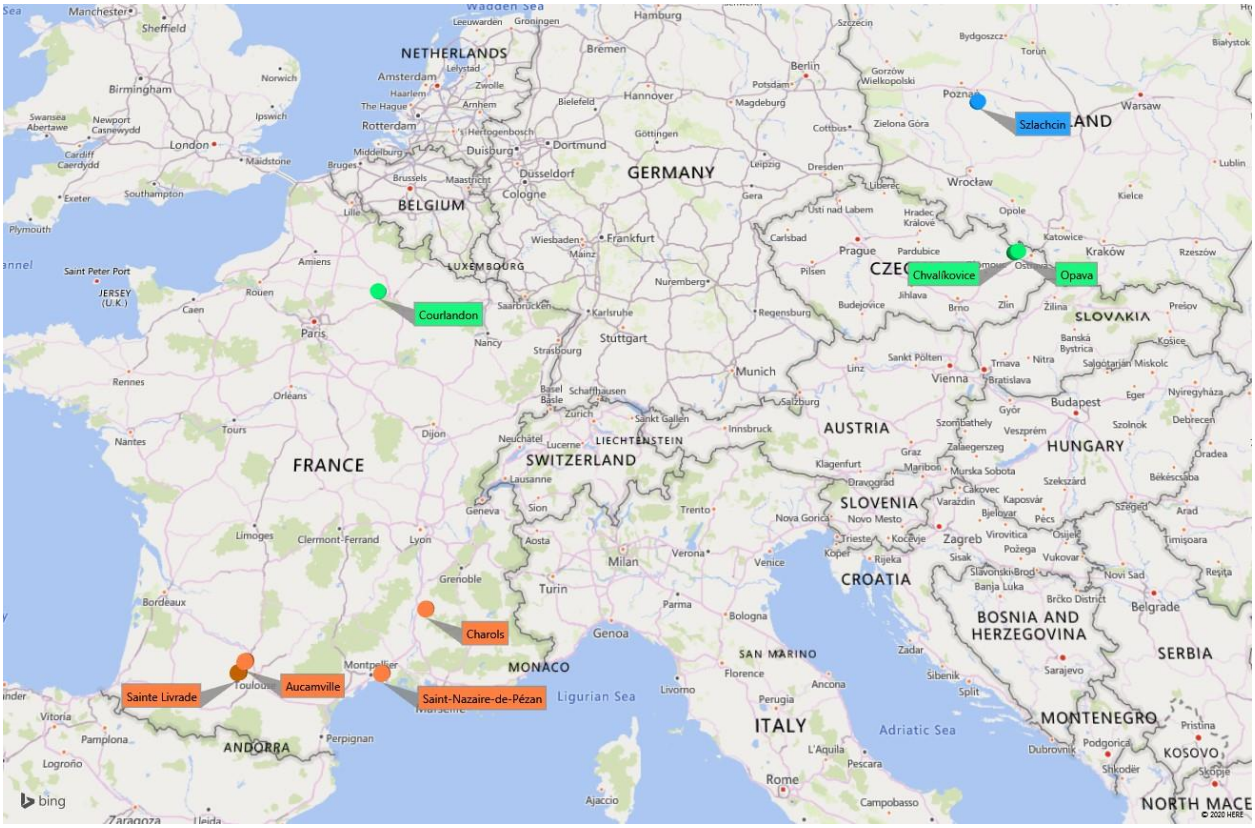

Figure 1: Map of trial locations, ERYSCR

Summary of results is available in ~~Table 3.2-45~~ Table 3.2-45 (Maritime + North east EPPO) ~~and~~ ~~Table 3.~~2-46: Efficacy, Oilseed rape, ERYSCR, intensity of attack (infect and efficacy in %); summary

EPPO Zone climatic	Timing of assessment			Untreated infect	BAS 762 02 F 1 L/ha infect	BAS 762 02 F 1 L/ha efficacy	BAS 9488 0 F 1 L/ha infect	BAS 9488 0 F 1 L/ha efficacy
Maritime	BBCH 75-79 29-41 DAT	**n=4**	mean (min-max)	**54,8** (18,2-85)	23,3 (4,9-43,8)	**62,1** (48,5-73,1)	18,6 (5,1-27,5)	**66,7** (61,7-72)
North east	BBCH 85 50-62 DAT	**n=4**	mean (min-max)	**20,0** (17,3-25)	6,6 (4,5-8,8)	**66,9** (58-75,7)	7,8 (6,5-9)	**59,7** (53,2-74)
North east including MAR trials*	BBCH 75-85 29-62 DAT	**n=7**	mean (min-max)	**40,2** (17,3-85)	**16,4** (4,5-43,8)	**63,2** (48,5-75,7)	**14,4** (6,5-27,5)	**62** (53,2-74)
Total ALL	BBCH 75-85 29-62 DAT	**n=8**	mean (min-max)	**37,4** (17,3-85)	15,0 (4,5-43,8)	**64,5** (48,5-75,7)	13,2 (5,1-27,5)	**63,2** (53,2-74)

***trials from CZ**

Table 3.2-47 Table 3.2-36 (Mediterranean EPPO).

Assessments on leaves or whole plants around BBCH 85 (ranging BBCH ~~79~~67-8~~9~~5) with min 5% infection threshold in untreated were chosen for evaluation.

The weather in the test trial locations of the Maritime and Mediterranean zones was characterized by dry and hot June and July in both test years 2018 and 2019. Such weather caused earlier senescence of oilseed rape and the assessments at BBCH 85 could not be conducted. Consequently, assessments around 30 DAT (range 28-41 DAT, BBCH 67-80) usually on leaf (or plant total) were considered for evaluation.

In the Polish trials located in the North east zone, assessments at BBCH 85 were conducted. On the contrary, the earlier assessments are not available. From this reason different assessment timings were considered for evaluation in the zones.

A significant reduction of *Erysiphe cruciferarum* was achieved in all trials across all three EPPO zones. The summary across Maritime and North east EPPO zones showed that the mean infestation of 37,4% in the untreated was reduced with BAS 762 02 F by 64,5%. The performance of the product was comparable to the standard (63,2%).

In the Mediterranean EPPO zone, similar figures can be observed with BAS 762 02 F. The mean infestation of 34,6% in the untreated was reduced with BAS 762 02 F by 64,3%. The difference was in performance of the standard (82,4%). that was noticeably superior to BAS 762 02 F.

Erysiphe cruciferarum is generally considered to be a disease of a minor importance. It appears locally and in specific years being driven by warm and dry weather. In accordance with the EPPO guidance PP 1/226 (3), typically 3 efficacy trials (range 2-6) are recommended for situations of minor uses. The available data has proven comparable efficacies efficacy across 3 different EPPO zones. The applicant concludes that with 4 trials per each zone of the intended GAP supported with additional 4 trials from Mediterranean zone the data can be considered sufficient for registration. It is proposed that the final decision is done on member state level.

Conclusion

According to the trial results, it can be concluded that application of BAS 762 02 F at 1 L/ha around flowering reduces *Erysiphe cruciferarum* in oilseed rape.
Decision needs to be done on member state level.

Table 3.2-45: Efficacy, Oilseed rape, ERYSCR, intensity of attack (infect and efficacy in %); summary

EPPO Zone climatic	Timing of assessment			Untreated	BAS 762 02 F 1 L/ha		BAS 9488 0 F 1 L/ha	
				infect	infect	efficacy	infect	efficacy
Maritime	BBCH 75-79 29-41 DAT	n=4	mean (min-max)	54.8 (18.2-85)	23.3 (4.9-43.8)	62.1 (48.5-73.1)	18.6 (5.1-27.5)	66.7 (61.7-72)
North east	BBCH 85 50-62 DAT	n=4	mean (min-max)	20.0 (17.3-25)	6.6 (4.5-8.8)	66.9 (58-75.7)	7.8 (6.5-9)	59.7 (53.2-74)
Total ALL	BBCH 75-85 29-62 DAT	n=8	mean (min-max)	37.4 (17.3-85)	15.0 (4.5-43.8)	64.5 (48.5-75.7)	13.2 (5.1-27.5)	63.2 (53.2-74)

Table 3.2-46: Efficacy, Oilseed rape, ERYSCR, intensity of attack (infect and efficacy in %); summary

EPPO Zone climatic	Timing of assessment			Untreated	BAS 762 02 F 1 L/ha		BAS 9488 0 F 1 L/ha	
				infect	infect	efficacy	infect	efficacy
Maritime	BBCH 75-79 29-41 DAT	**n=4**	mean (min-max)	**54,8** (18,2-85)	23,3 (4,9-43,8)	**62,1** (48,5-73,1)	18,6 (5,1-27,5)	**66,7** (61,7-72)
North east	BBCH 85 50-62 DAT	**n=4**	mean (min-max)	**20,0** (17,3-25)	6,6 (4,5-8,8)	**66,9** (58-75,7)	7,8 (6,5-9)	**59,7** (53,2-74)
North east including MAR trials*	BBCH 75-85 29-62 DAT	**n=7**	mean (min-max)	**40,2** (17,3-85)	**16,4** (4,5-43,8)	**63,2** (48,5-75,7)	**14,4** (6,5-27,5)	**62** (53,2-74)
Total ALL	BBCH 75-85 29-62 DAT	**n=8**	mean (min-max)	**37,4** (17,3-85)	15,0 (4,5-43,8)	**64,5** (48,5-75,7)	13,2 (5,1-27,5)	**63,2** (53,2-74)

***trials from CZ**

Table 3.2-476: Efficacy, Oilseed rape, ERYSCR, intensity of attack (infect and efficacy in %); summary

EPPO Zone climatic	Timing of assessment			Untreated	BAS 762 02 F 1 L/ha		BAS 9488 0 F 1 L/ha	
				infect	infect	efficacy	infect	efficacy
Mediterranean	BBCH 67-80 28-35 DAT	**n=4**	mean (min-max)	**34.6** (12.1-71.2)	15.3 (2.2-39.9)	**64.3** (44-82.1)	6.3 (1.1-11.8)	**82.4** (69.9-90.5)

***Neopseudocercosporella brassicae*, Oilseed rape**

A total of 5 trials showed sufficient level of infestation to evaluate the efficacy of BAS 762 02 F against *Neopseudocercosporella brassicae* in oilseed rape.

Crops at growth stages ranging from BBCH 63-69 were sprayed with 1 L/ha of BAS 762 02 F. Trials were conducted in 2019 in France in the Maritime climatic zone.

Summary of results is available in Table 3.2-487.

Assessments on pods or leaves around BBCH 85 (ranging BBCH 77-85 97). The infection in untreated ranged from 3,9% 9,8% to 37,3%.

Neopseudocercosporella brassicae is a disease of a minor importance and minor occurrence in general. However, 5 trials in oilseed rape in the Maritime zone generated results that showed efficacy of BAS 762 02 F on the in the control of this pathogen. In the summary, the mean infestation of 18.7 19,9% in the untreated was reduced with BAS 762 02 F by 63.6 59,3%. The standard product performed even better (74.2 68,7%).

In regard to the minor importance of the pathogen it is proposed that it is decided on member state level if the available data is sufficient to grant the registration.

Conclusion

According to the trial results, it can be concluded that application of BAS 762 02F at 1 L/ha around flowering reduces *Neopseudocercosporella brassicae* in oilseed rape.
Decision needs to be done on member state level.

Table 3.2-48: Efficacy, Oilseed rape, MYCOBR, intensity of attack (infect and efficacy in %); summary

EPPO Zone climatic			Untreated	BAS 762 02 F 1 L/ha		BAS 9488 0 F 1 L/ha	
			infect	infect	efficacy	infect	efficacy
Maritime	n=5	mean	18,7	6,6	63,6	5,0	74,2
		(min-max)	(3,9-37,3)	(1,8-11,5)	(53,1-86,5)	(0,9-9,2)	(65-87,5)

Table 3.2-49: Efficacy, Oilseed rape, MYCOBR, intensity of attack (infect and efficacy in %); summary

EPPO Zone climatic			Untreated	BAS 762 02 F 1 L/ha		BAS 9488 0 F 1 L/ha	
			infect	infect	efficacy	infect	efficacy
Maritime	**n=5**	mean	**19,9**	7,5	**59,3**	5,9	**68,7**
		(min-max)	(9,8-37,3)	(1,8-11,5)	(31,9-86,5)	(1,7-9,2)	(49,4-87,5)

Information on trials submitted in Sunflower

Between 2018 and 2020, altogether 76 efficacy trials were carried out to prove the fungicidal efficacy of BAS 762 02 F in sunflower. The trials were conducted in the Czech Republic and France (Maritime zone), Bulgaria, Hungary, Romania and Slovakia (South-East zone). The distribution of trials by country and year and by EPPO zone is provided in

Table 3.**2-50**8 and
Table 3.2-5139.
Product at target dose rate of 1 L/ha was applied according to the GAP once (single application) within the BBCH stage ranging from 31 to 69. In addition, 2 treatments of BAS 762 02 F at 1 L/ha were tested in some of the trials (double application). The spray interval was 6 ~~15~~-59 days. For each disease, the results of double application in comparison to the single application are presented in a separate table.
BAS 9488 0 F known as Propulse at the dose rate of 1 L/ha (fluopyram 125 g/L +prothioconazole 125 g/L) was used as a reference product.
The majority of trials in sunflower was conducted within the South east EPPO zone where the vast majority growing areas of the crop and also the vast majority of the testing institutions is located. Consequently, not always the full data set can be provided from the Maritime zone (DIAPHE: 5 trials, LEPTLI: 9 trials, SCLESC: 5 trials, ALTEHE: 5 trials). However, the only concerned member states within the Maritime zone in which sunflower is considered to be a major crop are Austria and the Czech Republic. It is proposed that the results obtained in the neighbouring countries Slovakia (for CZ) and Slovakia and Hungary (for AT) are considered supporting for the authorization in Austria and the Czech Republic. It is proposed that the decision of acceptability is done by the concerned member states.
In Germany and Poland, sunflower is considered to be a minor crop. It is therefore assumed that the reduced data sets can be considered as sufficient for them.

Evaluation of fungicidal efficacy in sunflower was focused mainly on stem assessments around BBCH 85 because the invasion of the stem has direct influence on the yield. However due to many trials in which disease was observed on leaves only, also the leaf assessments are presented on *Diaporthe helianthi*~~a~~, ~~and~~ *Alternaria helianthi*~~a~~ and *Sclerotinia sclerotiorum*. In case of leaf assessments, the choice focused on assessments around BBCH 75 (or nearest). On leaves, BBCH 75 is seen as relevant assessment due to higher green area than in later growth stages around BBCH 85.

The distribution of trials in sunflower is provided below.

Table 3.2-~~50~~ 38: Distribution of trials by location and year; Sunflower

Crop	EPPO Zone	Country	Year			TOTAL
			2018	2019	2020	per country
Sunflower	Maritime	CZ	3	3	2	**8**
		FR	4	2	0	**6**
	South East	BG	5	3	0	**8**
		HU	6	5	1	**12**
		RO	6	9	2	**17**
		SK	15	8	2	**25**
Total						**76**

Table 3.2-~~51~~ 39: Distribution of trials by EPPO zone; Sunflower

Crop	EPPO Zone	TOTAL per zone
Sunflower	Maritime	14
	South East	62
TOTAL ALL		**76**

Diaporthe helianthi, Sunflower

A total of 25 trials showed sufficient level of infestation to evaluate the efficacy of BAS 762 02 F against *Diaporthe helianthi* in sunflower. Crops at growth stages ranging from BBCH 31-69 were sprayed once with 1 L/ha of BAS 762 02 F. In some trials also the double application was done. The first treatment occurred within BBCH ~~31-59~~ 32-51 and was followed by the second treatment during the flowering within BBCH 61-~~69~~ 65. Trials were conducted between 2018 and 2020 in the Maritime climatic zone (the Czech Republic and France) and the South East climatic zone (Romania and Slovakia).

Summary of results is available in Table 3.2-5240 (single application) and Table 3.2-5341 (double application.

Assessments on leaves around BBCH 75 (ranging BBCH 73-86) and stems around BBCH 85 (ranging BBCH 69-89) with min 5% infection threshold in untreated were chosen for evaluation.

A significant reduction of *Diaporthe helianthi* was achieved in all trials. The summary across both EPPO zones showed that on leaves the mean infestation of 12,6 % in the untreated was reduced with BAS 762 02 F by 84,3 %. On stems, the mean infestation of 15,4 % in the untreated was reduced with BAS 762 02 F by 80,9 %. On both leaves and stems the performance of the product was comparable to the standard.

In 4 trials out of 25, the effect of double application in comparison to the single application was tested. No significant effect of the double application was observed in these trials, the results were comparable.

Conclusion

According to the trial results, it can be concluded that application of BAS 762 02 F at 1 L/ha around flowering controls *Diaporthe helianthi* in sunflower under a wide range of agroclimatic conditions.

Table 3.2-5240: Efficacy, Sunflower, DIAPHE, single application, intensity of attack (infect and efficacy in %), stem and leaf; summary

EPPO Zone climatic	No, of trials	Plant part	No, of assessm, per PP		Untreated infect	BAS 762 02 F 1 L/ha infect	BAS 762 02 F 1 L/ha efficacy	BAS 9488 0 F 1 L/ha infect	BAS 9488 0 F 1 L/ha efficacy
Maritime	**n=5**	leaf	**n = 2**	mean	**22,6**	9,9	**62,2**	10,9	**56,4**
				(min-max)	(9–36,2)	(2,5–17,4)	(52–72,3)	(3,2–18,6)	(48,6–64,3)
		stem	**n = 3**	mean	**14,8**	4,9	**67,8**	7,4	**52,6**
				(min-max)	(12,4–17,4)	(3,5–7,3)	(58,1–73)	(3,7–13,6)	(21,8–74,8)
South east	**n=20**	leaf	**n = 18**	mean	**11,4**	1,7	**86,8**	1,6	**87,4**
				(min-max)	(7,1–24,7)	(0–9,2)	(62,8–100)	(0–9,6)	(61,1–100)
		stem	**n = 10**	mean	~~15,5~~ **15,6**	2,1	**84,8**	2,2	**86,4**
				(min-max)	(5,8–51,2)	(0,6–5,4)	(62,1–93,5)	(0,2–6,1)	(65,6–98,2)
Total ALL	**n=25**	leaf	**n = 20**	mean	**12,6**	2,5	**84,3**	2,5	**84,3**
				(min-max)	(7,1–36,2)	(0–17,4)	(52–100)	(0–18,6)	(48,6–100)
		stem	**n = 13**	mean	**15,4**	2,7	**80,9**	3,4	**78,6**
				(min-max)	(5,8–51,2)	(0,6–7,3)	(58,1–93,5)	(0,2–13,6)	(21,8–98,2)

PP=plant part

Table 3.2-5241: Efficacy, Sunflower, DIAPHE, double application, intensity of attack (infect and efficacy in %), stem and leaf; summary

EPPO Zone climatic	No, of trials	Plant part	No, of assessm, per PP		Untreated infect	BAS 762 02 F 1 L/ha infect	BAS 762 02 F 1 L/ha efficacy	BAS 762 02 F 2x 1 L/ha infect	BAS 762 02 F 2x 1 L/ha efficacy	BAS 9488 0 F 1 L/ha infect	BAS 9488 0 F 1 L/ha efficacy
Maritime	**n=1**	stem	**n = 1**	mean	**12,4**	3,5	**72,2**	5,0	**59,5**	4,8	**61,3**
				(min-max)	(12,4–12,4)	(3,5–3,5)	(72,2–72,2)	(5–5)	(59,5–59,5)	(4,8–4,8)	(61,3–61,3)
South east	**n=3**	leaf	**n = 3**	mean	**11,9**	1,0	**90,8**	0,8	**92,3**	1,0	**91**~~,1~~
				(min-max)	(10–14,4)	(0–1,8)	(82,2–100)	(0–1,5)	(85,5–100)	(0–1,5)	(86–100)
Total ALL	**n=4**	leaf	**n = 3**	mean	**11,9**	1,0	**90,8**	0,8	**92,3**	1,0	**91**~~,1~~
				(min-max)	(10–14,4)	(0–1,8)	(82,2–100)	(0–1,5)	(85,5–100)	(0–1,5)	(86–100)
		stem	**n = 1**	mean	**12,4**	3,5	**72,2**	5,0	**59,5**	4,8	**61,3**
				(min-max)	(12,4–12,4)	(3,5–3,5)	(72,2–72,2)	(5–5)	(59,5–59,5)	(4,8–4,8)	(61,3–61,3)

PP=plant part

Plenodomus lindquistii, Sunflower

A total of 37 trials showed sufficient level of infestation to evaluate the efficacy of BAS 762 02 F against *Plenodomus lindquistii* in sunflower. Crops at growth stages ranging from BBCH 31-69 were sprayed once with 1 L/ha of BAS 762 02 F. In some trials also the double application was done. The first treatment occurred within BBCH 31-5957 and was followed by the second treatment during the flowering within BBCH 61-69.Trials were conducted between 2018 and 2020 in the Maritime climatic zone (the Czech Republic and France) and the South East climatic zone (Bulgaria, Hungary, Romania and Slovakia).
Summary of results is available in Table 3.2-5442 (single application) and

Table 3.2-5543 (double application).

Assessments on stems around BBCH 85 (ranging BBCH 75-87) with min 5% infection threshold in untreated were chosen for evaluation.

A significant reduction of *Plenodomus lindquistii* was achieved in all trials across ~~all~~ two EPPO zones. The summary across ~~all~~ both EPPO zones showed that the mean infestation of 14,1 % in the untreated was reduced with BAS 762 02 F by 73,3%. The performance of the product was comparable to the standard (73~~.1~~%).

In 13 trials out of 37, the effect of double application in comparison to the single application was tested. The double application resulted in a higher efficacy in all cases and outperformed the single application with ~~+ 10.8~~ +10,7 percentage points.

In case of one Bulgarian trial only a low efficacy of 36,9% was achieved with single application. In the same trial, however, the double application showed ~~80%~~ 79,7% efficacy.

Conclusion

According to the trial results, it can be concluded that application of BAS 762 02F at 1 L/ha around flowering controls *Plenodomus lindquistii* in sunflower under a wide range of agroclimatic conditions. The double application further increases the efficacy of the product.

Table 3.2-~~54~~42: Efficacy, Sunflower, LEPTLI, single application, intensity of attack (infect and efficacy in %), stem; summary

EPPO Zone climatic	No, of trials		Untreated	BAS 762 02 F 1 L/ha		BAS 9488 0 F 1 L/ha	
			infect	infect	efficacy	infect	efficacy
Maritime	**n=9**	mean	**11,2**	3,8	~~67,8~~ **68,2**	4,8	~~62,5~~ **62,2**
		(min-max)	(5,6–28,4)	(1–12)	(57,7–86,7)	(0,8–16,1)	(~~42~~ 38,8–89,9)
South east	**n=28**	mean	**15,0**	3,2	**75,~~1~~**	3,5	**76,5**
		(min-max)	(5,2–30,4)	(0,5–9,2)	(36,9–93,4)	(0,5–14,2)	(35,7–92,3)
Total ALL	**n=37**	mean	**14,1**	3,4	**73,3**	3,8	**73,~~1~~**
		(min-max)	(5,2–30,4)	(0,5–12)	(36,9–93,4)	(0,5–16,1)	(35,7–92,3)

Table 3.2-~~55~~43: Efficacy, Sunflower, LEPTLI, double application, intensity of attack (infect and efficacy in %), stem; summary

EPPO Zone climatic	No, of trials		Untreated	BAS 762 02 F 1 L/ha		BAS 762 02 F 2x 1 L/ha		BAS 9488 0 F 1 L/ha	
			infect	infect	efficacy	infect	efficacy	infect	efficacy
Maritime	**n=4**	mean	**14,8**	5,5	**64,8**	4,7	**69,8**	7,1	**55,7**
		(min-max)	(7,2–28,4)	(1,9–12)	(57,7–73,3)	(1,5–10)	(64,6–79,3)	(2,3–16,1)	(43,2–68,3)
South east	**n=9**	mean	**11,8**	~~3,0~~ 2,9	**71,8**	1,6	**85,0**	3,1	**73,4**
		(min-max)	(5,2–27,9)	(0,5–6,3)	(36,9–91,9)	(0,3–3)	(65,7–95,9)	(0,8–7,1)	(54,3–88)
Total ALL	**n=13**	mean	**12,7**	3,7	**69,6**	2,6	~~80,4~~ **80,3**	4,3	**67,9**
		(min-max)	(5,2–28,4)	(0,5–12)	(36,9–91,9)	(0,3–10)	(64,6–95,9)	(0,8–16,1)	(43,2–88)

Sclerotinia sclerotiorum, Sunflower

A total of ~~14~~ 16 trials showed sufficient level of infestation to evaluate the efficacy of BAS 762 02 F against *Sclerotinia sclerotiorum* in sunflower. Crops at growth stages ranging from BBCH 32-69 were sprayed once with 1 L/ha of BAS 762 02 F. In some trials also the double application was done. The first treatment occurred within BBCH ~~31–59~~ 32-51 and was followed by the second treatment during the flowering within BBCH 61-~~69~~ 67. Trials were conducted between 2018 and 2020 in the Maritime climatic zone (the Czech Republic) and the South East climatic zone (Hungary and Slovakia).
Summary of results is available in **Błąd! Nie można odnaleźć źródła odwołania.**44 (single application) and Table 3.2-5645 (double application).

Assessments on stems around BBCH 85 (ranging BBCH ~~75–87~~ 81-86) and leaves around BBCH 80 (ranging BBCH 73-86) with min 5% infection threshold in untreated were chosen for evaluation.

A significant reduction of *Sclerotinia sclerotiorum* was achieved in all trials. The summary across both EPPO zones showed that the on stems mean infestation of 29,5 % in the untreated was reduced with BAS 762 02 F by 72,5 %. The performance of the product was comparable to the standard (70,4%). On leaves, the mean infestation of 96 % in the untreated was reduced with BAS 762 02 F and standard by 100 %.

In ~~4~~ 5 trials out of ~~14~~ 16, the effect of double application in comparison to the single application was tested. No significant effect of the double application was observed in these trials, the results were comparable.

It is further referred to the robust data set that has been presented on *Sclerotinia sclerotiorum* in oilseed rape. Very good efficacy over 80% have been proven in Maritime, North East and South east zones. The trials obtained in oilseed rape provide supporting evidence of the efficacy of the product on *Sclerotinia*

species in another crop.

The applicant further refers to BAS 750 11 F that has been submitted to zRMS Austria in 2019 and is currently under review. BAS 750 11 F contains solo mefentrifluconazole and at the maximum dose rate it delivers 150 g of the active substance per hectare. A solid data set proving the performance of BAS 750 11 F on *Sclerotinia sclerotiorum* in sunflower has been provided. The average efficacy of 79% was achieved in the Maritime zone (based on 2 trials) and 86% efficacy was achieved in the South East zone (12 trials).

Conclusion

According to the trial results, it can be concluded that application of BAS 762 02 F at 1 L/ha around flowering controls *Sclerotinia sclerotiorum* in sunflower under a wide range of agroclimatic conditions.

Table 3.2-4544: Efficacy, Sunflower, SCLESC, intensity of attack (infect and efficacy in %), stem and leaf; summary

EPPO Zone climatic	No, of trials	Plant part	No, of assessm, per PP		Untreated infect	BAS 762 02 F 1 L/ha infect	BAS 762 02 F 1 L/ha efficacy	BAS 9488 0 F 1 L/ha infect	BAS 9488 0 F 1 L/ha efficacy
Maritime	**n=5**	stem	**n = 5**	mean	23,5	11,0	**58,9**	9,3 9,4	**65,3**
				(min-max)	(11–34,2)	(1,3–20,5)	(40–88,4)	(1,1–18,6)	(45,5 45,3–90,3)
South east	**n= 9 11**	leaf	**n = 2**	mean	**96**	0	**100**	0	**100**
				(min-max)	(96-96)	(0–0)	(100–100)	(0–0)	(100–100)
		stem	**n = 9**	mean	32,9	9,2	**80,0**	12,7	**73,3**
				(min-max)	(6–55,3)	(0–23)	(58,4–100)	(0–30)	(45,8–100)
Total ALL	**n=14 16**	leaf	**n = 2**	mean	**96**	0	**100**	0	**100**
				(min-max)	(96-96)	(0–0)	(100–100)	(0–0)	(100–100)
		stem	**n = 14**	mean	**29,5**	9,9	**72,5**	11,5	**70,4**
				(min-max)	(6–55,3)	(0–23)	(40–100)	(0–30)	(45,5 45,3–100)

Table 3.2-56 45: Efficacy, Sunflower, SCLESC, double application, intensity of attack (infect and efficacy in %), stem and leaf; summary

EPPO Zone climatic	No, of trials	Plant part	No, of assessm, per PP		Untreated infect	BAS 762 02 F 1 L/ha infect	BAS 762 02 F 1 L/ha efficacy	BAS 762 02 F 2x 1 L/ha infect	BAS 762 02 F 2x 1 L/ha efficacy	BAS 9488 0 F 1 L/ha infect	BAS 9488 0 F 1 L/ha efficacy
Maritime	**n=1**	stem	**n = 1**	mean	**31,0**	13,7	**56,0**	14,3	**54,0**	10,6	**65,8**
				(min-max)	(31–31)	(13,7–13,7)	(56–56)	(14,3–14,3)	(54–54)	(10,6–10,6)	(65,8–65,8)
South east	**n=3 4**	stem	**n = 3**	mean	**23,0**	4,4	**91,8**	3,3	**93,8**	6,9	**87,2**
				(min-max)	(6–54)	(0–13,3)	(75,3–100)	(0–10)	(81,5–100)	(0–20,7)	(61,7–100)
		leaf	**n = 1**	mean	**96**	0	**100**	0	**100**	0	**100**
				(min-max)							
Total ALL	**n=4 5**	stem	**n = 4**	mean	**25,0**	6,7	**82,8**	6,1	**83,9**	7,8	**81,9**
				(min-max)	(6–54)	(0–13,7)	(56–100)	(0–14,3)	(54–100)	(0–20,7)	(61,7–100)
		leaf	**n = 1**	mean	**96**	0	**100**	0	**100**	0	**100**
				(min-max)							

Alternaria helianthi, Sunflower

A total of 39 trials showed sufficient level of infestation to evaluate the efficacy of BAS 762 02 F against *Alternaria helianthi* in sunflower. Crops at growth stages ranging from BBCH 32 31-69 were sprayed once with 1 L/ha of BAS 762 02 F. In some trials also the double application was done. The first treatment occurred within BBCH 31-5955 and was followed by the second treatment during the flowering within BBCH 61-69. Trials were conducted between 2018 and 2020 in the Maritime climatic zone (the Czech Republic and France) and the South East climatic zone (Bulgaria, Hungary, Romania and Slovakia).
Summary of results is available in Table 3.2-5746 (single application) and Table 3.2-5847 (double application).

Assessments on leaves around BBCH 75 (ranging BBCH 73-85) and stems around BBCH 85 (ranging BBCH 81-87) with min 5% infection threshold in untreated were chosen for evaluation.

In case of *Alternaria helianthi*, 3 trials were not included into calculation of the mean values in the summary table~~s~~ 3.2-46 for single application of BAS 762 02 F. ~~These trials are marked in grey in the detailed table.~~ In these trials, no efficacy was observed neither with BAS 762 02 F nor with the standard. It is thus assumed that the application timing (BBCH 31-32) was not correct (too early) to control *Alternaria helianthi*. In the same 3 trials, however, the double application was tested as well. The performance of double application was 67% on stem in 1 trial and 81,8% and 70% on leaves in the other two trials.

In 36 out of 39 trials, a significant reduction of *Alternaria helianthi* was achieved with the single application of BAS 762 02 F. The summary across both EPPO zones showed that on leaves the mean infestation of ~~16.7~~ 18,5% in the untreated was reduced with BAS 762 02 F by ~~67.4~~ 74,3%. On stems, the mean infestation of ~~13.9~~ 15,1% in the untreated was reduced with BAS 762 02 F by ~~63.2~~ 68,5%. On both leaves and stems the performance of the product was comparable to the standard.
In 12 trials out of 39, the effect of double application in comparison to the single application was tested. ~~In 11 trials,~~ The double application resulted in a higher efficacy and in summary outperformed the single application with ~~+ 12.1~~ +28,1 percentage points on leaves and ~~+ 26.6~~ +26,4 percentage points on stems.

Conclusion

According to the trial results, it can be concluded that application of BAS 762 02 F at 1 L/ha around flowering controls *Alternaria helianthi* in sunflower under a wide range of agroclimatic conditions. The double application further increases the efficacy of the product.

Table 3.2-~~57~~46: Efficacy, Sunflower, ALTEHE, single application, intensity of attack (infect and efficacy in %), stem and leaf; summary

EPPO Zone climatic	No, of trials	Plant part	No, of assessm, per PP		Untreated infect	BAS 762 02 F 1 L/ha infect	BAS 762 02 F 1 L/ha efficacy	BAS 9488 0 F 1 L/ha infect	BAS 9488 0 F 1 L/ha efficacy
Maritime	**n = 5**	leaf	**n = 3**	mean	**7,9**	3,9	**52,4**	4,7	**39,7**
				(min-max)	(6,2–11)	(2–6,4)	(41,8–67,9)	(2,2–6,6)	(13,4–65,2)
		stem	**n = 3**	mean	**9,9**	5,1	**48,3**	6,0	**39,5**
				(min-max)	(8,5–10,8)	(4,6–5,4)	(46,1–50,1)	(4,3–7,1)	(34,3–49,4)
South east	**n = 31**	leaf	**n = 26**	mean	**19,7**	4,6	**76,8**	~~4.0~~ 4,1	**79,9**
				(min-max)	(5–39,9)	(0–10,9)	(48,9–100)	(0–11,8)	(48,1–100)
		stem	**n = 9**	mean	**16,8**	3,9	**75,2**	4,9	**77,6**
				(min-max)	(5–27)	(0,4–7,3)	(39,7–94,2)	(0–9)	(62,5–100)
Total ALL	**n = 36**	leaf	**n = 29**	mean	~~16.7~~ **18,5**	~~4.1~~ 4,5	~~67.4~~ **74,3**	~~3.7~~ 4,1	~~68.7~~ **75,8**
				(min-max)	(5–39.9)	(0–10.9)	(41.8–100)	(0–11.8)	(13.4–100)
		stem	**n = 12**	mean	~~13.9~~ **15,1**	~~3.9~~ 4,2	~~63.2~~ **68,5**	~~4.8~~ 5,2	~~62.8~~ **68,1**
				(min-max)	(5–27)	(0.4–7.3)	(39.7–94.2)	(0–9)	(34.3–100)

PP=plant part

Table 3.2-~~58~~47: Efficacy, Sunflower, ALTEHE, double application, intensity of attack (infect and efficacy in %), stem and leaf; summary

EPPO Zone climatic	No, of trials	Plant part	No, of assessm, per PP		Untreated infect	BAS 762 02 F 1 L/ha infect	BAS 762 02 F 1 L/ha efficacy	BAS 762 02 F 2x 1 L/ha infect	BAS 762 02 F 2x 1 L/ha efficacy	BAS 9488 0 F 1 L/ha infect	BAS 9488 0 F 1 L/ha efficacy
Maritime	**n=2**	leaf	**n = 1**	mean	**16,1**	16,2	**0,0**	11,7	**27,5**	15,8	**2,0**
				(min-max)	~~(16,1–16,1)~~	~~(16,2–16,2)~~	~~(0–0)~~	~~(11,7–11,7)~~	~~(27,5–27,5)~~	~~(15,8–15,8)~~	~~(2–2)~~
		stem	**n = 2**	mean	**13,6**	11,6	**24,3**	4,8	**63,5**	11,5	**18,8**
				(min-max)	(10,3–16,8)	(5,3–17,9)	(0–48,6)	(4,1–5,6)	(60–67)	(6,7–16,4)	(2,8–34,8)
South east	**n=10**	leaf	**n = 9**	mean	**19,6**	9,3	**55,7**	3,6	**83,8**	7,9	**62,6**
				(min-max)	(5–39,9)	(0–25)	(0–100)	(0–8,4)	(65,6–100)	(0–25)	(0–100)
		stem	**n = 3**	mean	**12,4**	2,7	~~66,1~~ **66,2**	2,4	**84,0**	3,3	**81,9**
				(min-max)	(5–26,3)	(1,6–3,5)	(39,7–86,7)	(0,6–5,8)	(78,1–88,6)	(0–9)	(65,7–100)
Total ALL	**n=12**	leaf	**n = 10**	mean	**19,2**	10,0	**50,1**	4,4	**78,2**	8,6	**56,5**
				(min-max)	(5–39,9)	(0–25)	(0–100)	(0–11,7)	(27,5–100)	(0–25)	(0–100)

EPPO Zone climatic	No, of trials	Plant part	No, of assessm, per PP		Untreated infect	BAS 762 02 F 1 L/ha infect	BAS 762 02 F 1 L/ha efficacy	BAS 762 02 F 2x 1 L/ha infect	BAS 762 02 F 2x 1 L/ha efficacy	BAS 9488 0 F 1 L/ha infect	BAS 9488 0 F 1 L/ha efficacy
		stem	**n = 5**	mean	**12,8**	6,3	**49,4**	3,4	**75,8**	6,6	**56,7**
				(min-max)	(5–26,3)	(1,6–17,9)	(0–86,7)	(0,6–5,8)	(60–88,6)	(0–16,4)	(2,8–100)

PP=plant part

Reduction of stem breaking and head breaking, Sunflower

Breaking of sunflower stems and sunflower heads is primarily caused by fungal diseases, which can finally also aggravate harvest (quantity, quality and convenience/speed).

The effect of BAS 762 02 F on reduction of stem breaking and head break in sunflower was assessed in the vast majority of trials. The evaluation of results is provided in this chapter. Trials with any stem or head breaking in the untreated are presented. Assessments with minimum 5% breaking in the untreated are summarized. Assessments around BBCH 89 were considered for evaluation.

Trials were conducted in 2018 and 2020 in the Maritime climatic zone (the Czech Republic and France) and the South East climatic zone (Slovakia).

Stem breaking

A total of ~~76~~ 28 trials generated data to evaluate effect of BAS 762 02 F at the dose rate of 1 L/ha on the reduction of the stem breaking in sunflower.

Summary is available in Table 3.2-59 48 (single application) and

Table 3.2-60 49 (double application).

In 23 out of ~~27~~ 28 trials, BAS 762 02 F lead to a reduction of stem breaking compared to the untreated control. The mean value of the ~~27~~ 28 trials showed that BAS 762 02 F reduced the percentage of broken stems from ~~9,4%~~ 9,1% in the untreated to 2,9%. The effect of the product was slightly superior to the effect of the standard (~~3,9%~~ 3,8%). The double application of BAS 762 02 F slightly increased the reduction effect.

Table 3.2-~~59~~ 48: Broken stems of sunflower around BBCH 89 (in %), single application

EPPO Zone climatic			Untreated	BAS 762 02 F 1 L/ha	BAS 94880 F 1 L/ha
Maritime	**n = ~~9~~ 10**	mean	~~6,6~~ **6,0**	~~5,6~~ **5,2**	~~5,5~~ **5,0**
		(min-max)	~~(0–41,2)~~ (0,5-19,3)	(0-19)	(0-~~36,9~~ 16,5)
South east	**n = 18**	mean	**10,8**	**1,6**	**3,1**
		(min-max)	(~~0~~ 0,3-41,2)	(0-~~19~~ 14,8)	(0-36,9)
Total ALL	**n = ~~27~~ 28**	mean	~~9,4~~ **9,1**	**2,9**	~~3,9~~ **3,8**
		(min-max)	~~(0–0)~~ (0,3-41,2)	(0-~~0~~ 19)	(0-~~32,9~~ 36,9)

Table 3.2-~~60~~ 49: Broken stems of sunflower around BBCH 89 (in %), double application

EPPO Zone climatic			Untreated	BAS 762 02 F 1 L/ha	BAS 762 02 F 2x 1 L/ha	BAS 94880 F 1 L/ha
Maritime	**n = 3**	mean	**7,2**	**5,3**	**4,0**	**4,9**
		(min-max)	~~(0–28,8)~~ (0,6-19,3)	(0,3-12,3)	(~~0~~ 1-8,3)	(0,5-11,8)
South east	**n = 4**	mean	**12,2**	**1,1**	**1,1**	**1,7**
		(min-max)	(0,3-28,8)	(0-~~12,3~~ 3,8)	(0-~~9,1~~ 3,8)	(0-~~11,8~~ 6,8)
Total ALL	**n =7**	mean	**10,~~0~~1**	**2,9**	**2,4**	**3,1**
		(min-max)	~~(0–0)~~ (0,3-28,8)	~~(0–0)~~ (0-3,8)	(0-~~4,6~~ 8,3)	(0-~~4,6~~ 11,8)

Head breaking

A total of 21 trials generated data to evaluate effect of BAS 762 02 F at the dose rate of 1 L/ha on the reduction of stem breaking in sunflower.

Summary is available in Table 3.2-61 50 (single application) and

Table 3.2-62 51 (double application).

In 21 out of 22 trials, BAS 762 02 F lead to a reduction of head breaking compared to the untreated control. The mean value of 22 trials showed that BAS 762 02 F reduced the percentage of broken heads from 20,2% in the untreated to 14,01%. The standard had a slightly inferior reduction effect (15,2% broken heads). The double application of BAS 762 02 F slightly increased the reduction effect.

Table 3.2-61 50: Broken heads of sunflower around BBCH 89 (in %), single application

EPPO Zone climatic			Untreated	BAS 762 02 F 1 L/ha	BAS 94880 F 1 L/ha
Maritime	**n = 6**	mean (min-max)	**25,1** (12,5-59,5)	**18,4** (0-46,8) (2-38,3)	**18,3** (0-41,8) (2,2-35,8)
South east	**n = 16**	mean (min-max)	**18,4** (1-59,5 48,5)	**12,4** (0-46,8)	**14,0** (0-41,8)
Total ALL	**n = 22**	mean (min-max)	**20,2** (0-0) (1-59,5)	**14,01** (0-0) (0-46,8)	**15,2** (0-40,5 41,8)

Table 3.2-62 51: Broken heads of sunflower around BBCH 89 (in %), double application

EPPO Zone climatic			Untreated	BAS 762 02 F 1 L/ha	BAS 762 02 F 2x 1 L/ha	BAS 94880 F 1 L/ha
Maritime	**n = 2**	mean (min-max)	**24,3** (1-41) (9,7-39)	**19,2** (08,4-30)	**19,4** (4,6-34,3)	**23,0** (0-39,3) (10,3-35,8)
South east	**n = 4**	mean (min-max)	**17,9** (1-41)	**8,0** (0-30 28,3)	**7,34** (0-34,3 23,3)	**12,1** (0-39,3)
Total ALL	**n = 6**	mean (min-max)	**20,0** (0-0) (1-41)	**11,7** (0-0) (0-30)	**11,4** (0-33,8 34,3)	**15,8** (0-33,8 39,3)

Conclusion

According to the trial results, it can be concluded that BAS 762 02 F at 1 L/ha reduces breaking of stems and heads in sunflower.

Green leaf area, Sunflower

Green leaf area available for assimilation at the end of vegetation around BBCH 85 was assessed in the trials. The value represents the percentage of the green leaf area remaining out of the total leaf surface. Higher green leaf area allows more assimilation and supports better stress tolerance, which can result in higher yield.

Effect of BAS 762 02 F on green leaf surface was assessed in 73 trials, out of them 21 trials provided data also for the double application.

Trials were conducted between years 2018 and 2020 in the Maritime climatic zone (the Czech Republic and France) and the South East climatic zone (Bulgaria, Hungary, Romania and Slovakia).

Single application

In 69 out of 73 trials, an increase of the green tissue compared to the untreated control was observed with 1 L/ha of BAS 762 02 F. The mean value of all trials showed 15,2% increase of the green leaf tissue in the plots treated with BAS 762 02 F in comparison to the untreated plots. The standard had a comparable effect.

Detailed results are presented in Table 3.2-63 52 (summary).

Table 3.2-63 52: Green leaf area in sunflower around BBCH 75-87 (in %); Single application; summary

Zone climatic	No, of trials		Untreated	BAS 762 02 F 1 L/ha	Standard BAS 9488 0 F 1 L/ha
Maritime	**n=12 11**	mean (min-max)	**19,6** (0-90 42,5)	**32,4** (0-97 52,5)	**35,9** (0-98 85)
South east	**n=62**	mean (min-max)	**25,8** (0-80)	**41,5** (0-97)	**42,5** (0-98)
Total ALL	**n=73**	mean (min-max)	**24,9** (0-80)	**40,1** (0-0 97)	**41,5** (0-98)

Double application

In 16 out of 21 trials, two applications resulted in further increase of the green leaf area similarly as the standard.

Detailed results are presented in Table 3.2-64 53.

Table 3.2-64 53: Green leaf area in sunflower around BBCH 81-87 (in %); Double application; summary

EPPO Zone climatic	No, of trials		Untreated	BAS 762 02 F 1 L/ha	BAS 762 02 F 2x 1 L/ha	Standard BAS 9488 0 F 1 L/ha
Maritime	**n=4**	mean (min-max)	**13,8** (0-80 30)	**18,4** (0-85 47,5)	**24,2** (11-95) (10,5-50)	**20,9** (0-85 47,5)
South east	**n=17**	mean (min-max)	**25,6** (0-80)	**40,6** (0-85)	**45,1** (11 15,5-95)	**43,7** (0 11-85)
Total ALL	**n=21**	mean (min-max)	**23,4** (0-80)	**36,4** (0-0 85)	**41,1** (0-80) (10,5-95)	**39,4** (11-85)

Conclusion

According to the trial results presented, it can be concluded that BAS 762 02 F at 1 L/ha has a positive effect on increased green leaf area in sunflower.

Information on trials submitted in Wheat

Between 2018 and 2019, altogether 24 efficacy trials were carried out to prove the fungicidal efficacy of BAS 762 02 F in winter wheat. The trials were conducted in the Czech Republic, Denmark, France, Germany and the United Kingdom (Maritime zone) and Latvia, Lithuania and Poland (North-East Zone) The distribution of trials by country and year and by EPPO zone is provided in Table 3.2-6554 and

Table 3.2-6655.

Product at target dose rate of 1 L/ha was applied according to the GAP once within the BBCH stage ranging from 30 to 49 32.

Table 3.2-~~65~~ 54: Distribution of trials by location and year; Wheat

Crop	EPPO Zone	Country	Year		TOTAL
			2018	2019	per country
Wheat	Maritime	CZ	1	2	**3**
		DE	4	1	**5**
		DK	1	-	**1**
		FR	2	-	**2**
		UK	1	1	**2**
	North East	LT	1	-	**1**
		LV	1	-	**1**
		PL	5	4	**9**
Total					**24**

Table 3.2-~~66~~ 55: Distribution of trials by EPPO zone; Wheat

Crop	EPPO Zone	TOTAL per zone	
Wheat	Maritime	13	
	North East	11	
TOTAL ALL		**24**	

Oculimacula yallundae ~~species~~, Wheat

A total of 22 trials showed sufficient level of infestation to evaluate the efficacy of BAS 762 02 F against *Oculimacula yallundae* ~~species~~ in wheat. Crops at growth stages ranging from BBCH 30-32 were sprayed preventatively or curatively with 1 L/ha of BAS 762 02 F. Trials were conducted in 2018 and 2019 in the Maritime climatic zone (the Czech Republic, Denmark, France, Germany and the United Kingdom) and the North East climatic zone (Latvia, Lithuania and Poland).

Summary of results is available in Table 3.2-6756 and

Table 3.2-6857.

Assessments were conducted on stems around BBCH 75 (ranging BBCH 73-77). Trials with min 5% infection threshold in untreated were chosen for evaluation.

In 3 trials (1 Danish trial and 2 UK trials), high infestation was present at the time of the treatment. In case of UK trials 64-65% of plants were infected (frequency), in the Danish trial eyespot was observed even on 34% of the assessed area (in this case intensity was assessed). Obviously, these applications were strong curative and the fungicides were not able to control the disease anymore. The lack of efficacy was observed not only with the product but also with both reference products. Hence these three trials were ~~marked in grey in the detailed table and~~ excluded from the calculation of the mean values for the summary table. A separate summary is provided for them.
It is observed that curative applications were also done in several Polish trials but the product reached good ~~efficacies~~ efficacy there. In comparison to the UK trials it is assumed that even though in both countries the infections were present at application, the fact that the disease is faster developing under moist weather conditions, which are common in the United Kingdom in spring than in dryer climates as in Poland, could explain why the efficacy in Poland is better under curative conditions than in the United Kingdom. Dry weather can cause infected outer leaf sheaths to shrivel and die, which may prevent infection from progressing. In case of the Danish trial, the infection at application was extremely high as in that case even intensity (not frequency as in the other trials) of 34% assessed at time of application.

In the remaining 19 trials a significant reduction of *Oculimacula yallundae* ~~species~~ was achieved. The summary across both EPPO zones showed that the relatively highly mean infestation of 27,3% in the untreated (range 5,8-66,4%) was reduced with BAS 762 02 F by 75,3%. The performance of the product was superior to both standards (prothioconazole based standard reached 62,8% and metrafenone based standard reached 65,7% efficacy).

Conclusion

According to the trial results, it can be concluded that the application of BAS 762 02F at 1 L/ha controls *Oculimacula yallundae* ~~species~~ in wheat under a wide range of agroclimatic conditions.

Table 3.2-~~67~~56: Efficacy, Wheat, ~~OLIMSP~~ PSDCHE, intensity of attack (infect and efficacy in %); summary

EPPO Zone climatic			Untreated	BAS 762 02 F 1 L/ha		BAS 9314 1 F 0,8 L/ha		BAS 560 00F 0,5 L/ha	
			infect	infect	efficacy	infect	efficacy	infect	efficacy
Maritime	**n=9**	mean	**26,3**	9,1	**70,7**	12,0	**54,7**	10,3	**66,9**
		(min-max)	(6,5-66,4)	(0-27,3)	(55,7-100)	(2-33,5)	(16,3-81,4)	(1,3-32,3)	(51,3-87,8)
North east	**n=10**	mean	**28,1**	5,3	**79,4**	6,7	**70,0**	~~8,6~~ 8,7	**64,6**
		(min-max)	(5,8-43,5)	(0,8-14,8)	(65,2-94,1)	(0,5-17,5)	(26,1-92,3)	(0,8-23,8)	(~~1,4~~ 1,3-96,8)
Total ALL	**n=19**	mean	**27,3**	7,1	**75,3**	9,2	**62,8**	9,4	**65,7**
		(min-max)	(5,8-66,4)	(0-27,3)	(55,7-100)	(0,5-33,5)	(16,3-92,3)	(0,8-32,3)	(~~1,4~~ 1,3-96,8)

Table 3.2-~~68~~57: Efficacy, Wheat, ~~OLIMSP~~ PSDCHE, strong curative treatment, intensity of attack (infect and efficacy in %); summary

EPPO Zone climatic			Untreated	BAS 762 02 F 1 L/ha		BAS 9314 1 F 0,8 L/ha		BAS 560 00F 0,5 L/ha	
			infect	infect	efficacy	infect	efficacy	infect	efficacy
Maritime	**n=3**	mean	27,9	24,4	**12,8**	23,2	**19,0**	24,8	**16,8**
		(min-max)	(20,4-34,7)	(21,9-29)	(0-22,1)	(13,8-31,7)	(8,7-32,1)	(19,2-28,7)	(0-33,1)

Zymoseptoria tritici, Wheat

A total of 11 trials showed sufficient level of infestation to evaluate the efficacy of BAS 762 02 F against *Zymoseptoria tritici* in wheat. Crops at growth stages ranging from BBCH 30-32 were sprayed with 1 L/ha of BAS 762 02 F. Trials were conducted in 2018 and 2019 in the Maritime climatic zone (the Czech Republic, Denmark, Germany and the United Kingdom) and the North East climatic zone (Poland).

Summary of results is available in Table 3.2-6958.

Assessments on leaves 1-5 conducted between 20-52 days after the treatment were considered for evaluation. Assessments on lower leaf layers 4 and 5 beyond BBCH 59 were not considered relevant for the yield anymore and were thus not included in evaluation. The infection threshold in untreated was min. 5%.

The majority of the trials (8) was conducted in the Maritime climatic EPPO zone. Altogether three trials directly from the North east climatic EPPO zone are available. The concerned member states except for the United Kingdom: Poland, the Czech Republic, Germany and Austria lay in the neighbourhood of each other. It is assumed that the vast majority of the cereals in the concerned member states is grown in the fertile lowlands and the climatic conditions across those growing regions are therefore comparable. In order to confirm this assumption a comparison of conditions has been conducted via RegPest model. By means of the model those trials from the Maritime zone have been identified which have high similarity to the representative growing regions of Poland. Detailed explanations related to RegPest Model, the choice of the representative regions and the similarity comparison itself can be found in chapter 3.6. As a result of RegPest comparison, 5 Maritime trials from the Czech Republic and Germany with comparable conditions to Polish growing regions have been identified. ~~The trials are marked with a cross in the respective column of the detailed table (see column "Comparable to the NE EPPO").~~ Two separate calculations of the mean values for the North east zone are provided in the summary table – summary of purely North east zone results and summary of North east zone results + comparable Maritime zone results. ~~It is proposed that~~ Five comparable trials from the Czech Republic and Germany are considered in support of registration in Poland.

A significant reduction of *Zymoseptoria tritici* was achieved in all trials across both EPPO zones. A summary of all 11 trials across both EPPO zones showed that the mean infestation of 13,6% in the untreated was reduced with BAS 762 02 F by 77,4%. The performance of the product was comparable to the standard based on prothioconazole (75,3%) and was superior to the standard based on metrafenone (54,9%).

Conclusion

According to the trial results, it can be concluded that application of BAS 762 02F at 1 L/ha controls *Zymoseptoria tritici* in wheat under a wide range of agroclimatic conditions.

Table 3.2-~~69~~58: Efficacy, Wheat, SEPTTR, intensity of attack (infect and efficacy in %); summary

EPPO Zone climatic				Untreated	BAS 762 02 F 1 L/ha		BAS 9314 1 F 0,8 L/ha		BAS 560 00F 0,5 L/ha	
				infect	infect	efficacy	infect	efficacy	infect	efficacy
Maritime		**n=8**	mean	**14,5**	~~4,0~~ 4,1	**75,7**	3,1	**77,2**	6,5	**54,1**
			(min-max)	(5,1-21,8)	(0-9,8)	(55,2-100)	(0-6,8)	(52,4-100)	(0,8-18,5)	(13,1-96,8)
North east	**trials located in NE EPPO**	**n=3**	mean	**11,3**	2,9	**82,0**	5,4	**70,2**	6,2	**57,1**
			(min-max)	(6,2-21,3)	(0,3-7,5)	(64,7-95,3)	(0,4-15)	(29,4-93)	(1,1-15)	(29,4-82,2)
	including MAR trials with comparable climate to NE	**n=8**	mean	**11,7**	2,5	**82,5**	3,2	**76,8**	5,1	**58,0**
			(min-max)	(5,1-21,3)	(0-8)	(61-100)	(0-15)	(29,4-100)	(0,8-15)	(13,1-96,8)
Total ALL		**n=11**	mean	**13,6**	3,7	**77,4**	3,7	**75,3**	6,4	**54,9**
			(min-max)	(5,1-21,8)	(0-9,8)	(55,2-100)	(0-15)	(29,4-100)	(0,8-18,5)	(13,1-96,8)

Blumeria graminis, Wheat

During the field testing of the product, powdery mildew occurred in several trials. The results are presented in this chapter.

A total of 10 trials showed sufficient level of infestation to evaluate the efficacy of BAS 762 02 F against *Blumeria graminis* in wheat. Crops at growth stages ranging from BBCH 30-32 were sprayed with 1 L/ha of BAS 762 02 F. Trials were conducted in 2018 and 2019 in the Maritime climatic zone (the Czech Republic and Denmark) and the North East climatic zone (Latvia and Poland).

Summary of results is available in Table 3.2-7059.

Assessments on leaves 1-5 conducted between 20-41 days after the treatment were considered for evaluation. Assessments on lower leaf layers 4 and 5 beyond BBCH 59 were not considered relevant for the yield anymore and were thus not included in evaluation. The infection threshold in untreated was min. 5%. In addition, one Latvian trial with infection in the untreated slightly below the threshold – 4,9% - was included in the evaluation as well.

The majority of the trials (8) was conducted in the North east climatic EPPO zone, altogether two trials from the Maritime climatic EPPO zone are available. Following the logic explained in the previous chapter on *Zymoseptoria tritici*, a comparison of conditions has been conducted also for trials with *Blumeria graminis* with intention to find out which trials from the North east climatic zone offer data that can be relevant also for the concerned member states of the Maritime zone and vice versa. By means of the RegPest model the available Polish trials have been compared to the chosen representative regions of the concerned member states of the Maritime zone: the Middle Bohemia and the South east region of the Czech Republic, the regions Sachsen-Anhalt and Lüneburg in Germany and Niederösterreich in Austria. Detailed explanations related to RegPest Model, the choice of the representative regions and the similarity comparison itself can be found in chapter 3.6. As a result of RegPest comparison, a percentage of similarity between each trial and representative region has been calculated.

~~The potentially acceptable trials are marked with a cross in the respective column of the detailed table (see columns "Comparable to the MA EPPO" and "Comparable to the NE EPPO").~~ Always two separate rows for the mean values are provided in the summary table, one with purely the results of the climatic zone and the other including the potentially comparable trials. ~~It is proposed that~~ Seven Polish trials with comparable conditions to representative regions of the Maritime zone are considered relevant to support registration in Austria, the Czech Republic and Germany and one Czech trial with comparable condition to the North east zone supports registration in Poland.

Looking at the results it can be stated that a significant reduction of *Blumeria graminis* was achieved in all trials across both EPPO zones. A summary of altogether 10 trials across both EPPO zones showed that the mean infestation of 10,6% in the untreated was reduced with BAS 762 02 F by 76,8%. The performance of the product was comparable to the standards based on prothioconazole (75,4%) and metrafenone (~~74,8~~ 75,8%). Both reference products are registered against powdery mildew in cereals across Europe.

Conclusion

According to the trial results, it can be concluded that application of BAS 762 02F at 1 L/ha provides good efficacy on *Blumeria graminis* in wheat similar to the standards Proline and Flexity.

Table 3.2-~~70~~59: Efficacy, Wheat, ERYSGR, intensity of attack (infect and efficacy in %); summary

EPPO Zone climatic				Untreated	BAS 762 02 F 1 L/ha		BAS 9314 1 F 0,8 L/ha		BAS 560 00F 0,5 L/ha	
				infect	infect	efficacy	infect	efficacy	infect	efficacy
Maritime	**trials located in MAR EPPO**	**n=2**	mean	6,8	1,6	**78,4**	2,8	**64,6**	0,7	**90,0**
			(min-max)	(5-8,5)	(0,7-2,5)	(70,6-~~36,3~~ 86,2)	(0,8-4,8)	(44,1-85)	(0,6-0,8)	(88,8-91,2)
	including NE trials with comparable climate to MAR*	**n=9**	mean	11,2	3,3	**74,9**	3,4	**72,8**	4,1	~~72,0~~ **73,1**
			(min-max)	(5-23,3)	(0,1-9,4)	(53,5-98,8)	(0,1-10)	(44,1-99,7)	(0,3-12,9)	(~~35,9~~ 44,6-97,7)
North east	**trials located in NE EPPO**	**n=8**	mean	11,6	3,4	**76,5**	3,1	**78,1**	4,5	~~71,0~~ **72,2**
			(min-max)	(4,9-23,3)	(0,1-9,4)	(53,5-98,8)	(0,1-10)	(48,6-99,7)	(0-12,9)	(~~35,9~~ 44,6-100)
	including MAR trials with comparable climate to NE	**n=9**	mean	10,8	3,1	**77,5**	2,9	**78,8**	4,0	~~73,0~~ **74,1**
			(min-max)	(4,9-23,3)	(0,1-9,4)	(53,5-98,8)	(0,1-10)	(48,6-99,7)	(0-12,9)	(~~35,9~~ 44,6-100)
Total ALL		**n=10**	mean	10,6	3,0	**76,8**	3,1	**75,4**	3,7	~~74,8~~ **75,8**
			(min-max)	(4,9-23,3)	(0,1-9,4)	(53,5-98,8)	(0,1-10)	(44,1-99,7)	(0-12,9)	(~~35,9~~ 44,6-100)

*except ~~United Kingdom~~ Latvia

Dose rate range justification

Oilseed rape

Data from altogether ~~52~~ 50 trials following application of BAS 762 02 F at reduced dose rate of 0,6 L/ha compared to the full dose rate of 1 L/ha were presented in the Minimum Effective Dose chapter. As the reduced dose rate tested in MED chapter is the same as the lower limit of the dose rate range, no additional tables are presented here. It is referred to

Table 3.2-25 (summary of results).

Dose response in oilseed rape was justified on *Sclerotinia sclerotiorum*. The benefit of the full dose rate of 1 L/ha is obvious: it provided clearly superior (1 L/ha: ~~87.2%~~ 87,1% versus 0,6 L/ha: ~~74.9%~~ 74,8% efficacy in average) and more consistent control of *Sclerotinia sclerotiorum* in each EPPO zone. On the other hand, it is observed that in 16 out of ~~52~~ 50 trials (1/3 of trials) the reduced dose rate achieved efficacy above 84% which was the average performance of the full dose rate as presented in Table 3.2-41. Moreover, efficacy of minimum 75% was observed in ~~27~~ 26 trials out of ~~52~~ 50 which represents one half of the trials.

The results demonstrate that under certain conditions reasonable efficacy may be achieved with the reduced dose rate of 0,6 L/ha.

Conclusion

The proposed dose rate range of 0,6-1 L/ha of BAS 762 02 F provides the farmer reasonable frame to adapt the dose rate on actual situation and is considered as justified for use in oilseed rape in Hungary, Romania, Slovakia, Slovenia and the Czech Republic.

Sunflower

Data from altogether 54 trials following application of BAS 762 02 F at reduced dose rate of 0,6 L/ha compared to the full dose rate of 1 L/ha were presented in the Minimum Effective Dose chapter. As the reduced dose rate tested in MED chapter is the same as the lower limit of the dose rate range, no additional tables are presented here. It is referred to Table 3.2-27(summary of results, single application),

Table 3.2-28 (summary of results, double application).

Dose response in sunflower was justified on *Diaporthe helianthi*, *Plenodomus lindquistii*, *Sclerotinia sclerotiorum* and *Alternaria helianthi*. The benefit of the full dose rate of 1 L/ha is obvious: it provided clearly the best and most consistent control of sunflower diseases in both EPPO zones. On the other hand, there were situations when already the reduced dose rate gave sufficient efficacy on the level of the full dose rate or at least on the level of the reference product. Moreover, the reduced dose rate applied as double treatment provided comparable or even superior efficacy to the full dose rate applied as single application. In some situations, the double application of the full dose rate was the best solution.

Conclusion

The proposed dose rate range of 0,6-1 L/ha of BAS 762 02 F provides the farmer reasonable frame to adapt the dose rate applied as single or double application on actual situation and is considered as justified for use in sunflower in Hungary, Romania, Slovakia, Slovenia and the Czech Republic.

Wheat

Data from altogether 19 trials following application of BAS 762 02 F at reduced dose rate of 0,6 L/ha or 0,7 L/ha compared to the full dose rate of 1 L/ha were presented in the Minimum Effective Dose chapter. As the reduced dose rate tested in MED chapter is the same as the lower limit of the dose rate range, no additional tables are presented here. It is referred to Table 3.2-29a, 3.2.27b, and Table 3.2-32a, 3.2.28b.

Dose response in wheat was justified on ~~*Oculimacula* species~~ *Pseudocercosporella herpotrichoides* and on *Zymoseptoria tritici*. The benefit of the full dose rate of 1 L/ha is obvious: it provided clearly superior efficacy (1 L/ha: ~~75.3%~~ 74,7% versus 0,6 L/ha: ~~61.1%~~ 61,8%; 1 L/ha: 75,5% versus 0,7 L/ha: 60,8% on ~~OLIMSP~~ PSDCHE; and 1 L/ha: ~~77.4%~~ 81,2% versus 0,6 L/ha: ~~66.5%~~ 67,4%; 1 L/ha: 73% versus 0,7 L/ha: 65,5% on SEPTTR) which was more consistent in both EPPO zones. On the other hand, it is observed that in 4 out of 19 trials with ~~*Oculimacula* species~~ *Pseudocercosporella herpotrichoides* the reduced dose rate achieved efficacy above 75% efficacy which is the average performance of the full dose rate as presented in Table 3.2-676 and altogether 7 trials (more then 1/3) reached more than 70% of efficacy. In addition, the efficacy of the lower rate in the maritime zone was ~~still comparable to the~~ higher than efficacy of standard Proline. On *Zymoseptoria tritici* in the maritime EPPO zone the lower dose rate performed in 50% of the trials on the same level as the standard Proline.

The results demonstrate that under certain conditions reasonable efficacy can be achieved with the reduced dose rate of 0,6 L/ha.

Conclusion

The proposed dose rate range of 0,6-1 L/ha of BAS 762 02 F provides the farmer reasonable frame to adapt the dose rate on actual situation and is considered as justified for use in wheat in the Czech Republic.

Yield (and relevant quality indicators), from efficacy trials (in the presence of challenging pest populations)

Oilseed rape

A total of ~~101~~ 96 efficacy trials on oilseed rape, carried out between 2018 and 2019, have been harvested to confirm the yield response of BAS 762 02 F in the presence of diseases. The range of presented trials covers also the application timings up to BBCH 75 which is considered as the worst case scenario.

Yield in dt/ha is represented by ~~102~~ 96 results. Summary is presented in Table 3.2-71 60.

~~100~~ 95 trial results are available for thousand grains weight, see summary in

Table 3.2-72: Yield in presence of disease (in dt/ha and % of UTC), Oilseed rape; summary

EPPO Zone climatic			Untreated dt/ha	BAS 762 02 F 1 L/ha dt/ha	BAS 762 02 F 1 L/ha %UTC	BAS 9488 0 F 1 L/ha dt/ha	BAS 9488 0 F 1 L/ha %UTC
Maritime	**n = 43**	mean	**33,0**	37,8	**132,1**	37,7	**124,8**
		(min-max)	(3,6-49)	(17,6-53)	(100,9-491)	(8,7-53,4)	(99,4-388,7)
Mediterranean	**n = 4**	mean	**40,4**	43,6	**109,5**	45,2	**115,4**
		(min-max)	(22,9-53)	(26,9-54,4)	(102,5-117,3)	(32-57,8)	(104,9-139,8)
North east	**n = 19**	mean	**34,4**	37,6	**109,7**	37,7	**109,9**
		(min-max)	(23,3-42,8)	(26,5-45,7)	(96,3-136,7)	(24,6-48,9)	(101,2-153,3)
South east	**n = 30**	mean	**29,2**	33,2	**114,3**	32,8	**112,7**
		(min-max)	(16,2-44,3)	(16,7-48)	(101,5-129,4)	(16,7-48,6)	(100,5-131,4)
Total ALL	**n = 96**	mean	**32,4**	36,5	**121,1**	36,5	**117,7**
		(min-max)	(3,6-53)	(16,7-54,4)	(96,3-491)	(8,7-57,8)	(99,4-388,7)

~~Table 3.2-73~~ 61.

Altogether ~~20~~ 17 trials provided information on oil content but in ~~3~~ 2 of them the oil content after the treatment with the reference product was not measured. All ~~20~~ 17 results are presented in the detailed table but only ~~17~~ 15 trial~~s~~ results have been presented for reference product. ~~that enable orthogonal comparison of the treatments were included in calculation of the means in the summary table~~. For results see summary in Table 3.2-74: Thousand grain weight in presence of disease (in G and % of UTC), Oilseed rape; summary

EPPO Zone climatic			Untreated G	BAS 762 02 F 1 L/ha G	BAS 762 02 F 1 L/ha %UTC	BAS 9488 0 F 1 L/ha G	BAS 9488 0 F 1 L/ha %UTC
Maritime	**n = 42**	mean	**4,7**	4,8	**104,1**	4,9	**105,0**
		(min-max)	(3,7-5,9)	(3,9-6,1)	(90,9-112,2)	(3,9-6,1)	(87,8-114,7)
Mediterranean	**n = 4**	mean	**3,9**	3,7	**96,7**	3,9	**99,4**
		(min-max)	(3,4-4,1)	(3,6-3,9)	(87,3-107,6)	(3,5-4,1)	(92,1-103,5)
North east	**n = 19**	mean	**4,9**	5,0	**102,7**	5,0	**103,2**
		(min-max)	(4,1-5,5)	(4,3-5,9)	(92,4-116,1)	(4,3-6)	(96-109,9)
South east	**n = 30**	mean	**4,4**	4,7	**108,4**	4,7	**108,5**
		(min-max)	(3,4-6,2)	(3,3-6,5)	(98,9-123)	(3,5-6,4)	(100-119,6)
Total ALL	**n = 95**	mean	**4,6**	4,8	**104,9**	4,8	**105,5**
		(min-max)	(3,4-6,2)	(3,3-6,5)	(87,3-123)	(3,5-6,4)	(87,8-119,6)

~~Table 3.2-75~~ 62.

Through results presented across ~~all~~ four EPPO zones, BAS 762 02 F shows that the yield in dt/ha has improved in comparison to the untreated, without any significant negative impact on quality parameters such as thousand grains weight and oil content.

~~Table 3.2-71: Yield in presence of disease (in dt/ha and % of UTC), Oilseed rape; summary~~

~~EPPO Zone climatic~~			~~Untreated~~	~~BAS 762 02 F 1 L/ha~~		~~BAS 9488 0 F 1 L/ha~~	
			~~dt/ha~~	~~dt/ha~~	~~%UTC~~	~~dt/ha~~	~~%UTC~~
~~Maritime~~	~~n = 44~~	~~mean~~	~~32,9~~	~~37,6~~	~~130,8~~	~~37,6~~	~~124,6~~
	-	~~(min-max)~~	~~(3,6-49)~~	~~(17,3-53)~~	~~(102,3-491)~~	~~(8,7-53,4)~~	~~(99,4-388,7)~~
~~Mediterranean~~	~~n = 4~~	~~mean~~	~~40,4~~	~~43,6~~	~~109,5~~	~~45,2~~	~~115,4~~
	-	~~(min-max)~~	~~(22,9-53)~~	~~(26,9-54,4)~~	~~(102,5-117,3)~~	~~(32-57,8)~~	~~(104,9-139,8)~~
~~North east~~	~~n = 23~~	~~mean~~	~~33,4~~	~~36,6~~	~~110,1~~	~~36,7~~	~~110,2~~
	-	~~(min-max)~~	~~(20,9-42,8)~~	~~(26,5-45,7)~~	~~(96,3-136,7)~~	~~(24,6-48,9)~~	~~(101,2-153,3)~~
~~South east~~	~~n = 31~~	~~mean~~	~~29,5~~	~~33,3~~	~~113,2~~	~~33,0~~	~~112,4~~
	-	~~(min-max)~~	~~(16,2-44,3)~~	~~(16,7-48)~~	~~(101,5-129,4)~~	~~(16,7-48,6)~~	~~(100,5-131,4)~~
~~Total ALL~~	~~n = 102~~	~~mean~~	~~32,3~~	~~36,3~~	~~119,9~~	~~36,3~~	~~117,3~~
	-	~~(min-max)~~	~~(3,6-53)~~	~~(16,7-54,4)~~	~~(96,3-491)~~	~~(8,7-57,8)~~	~~(99,4-388,7)~~

Table 3.2-72: Yield in presence of disease (in dt/ha and % of UTC), Oilseed rape; summary

EPPO Zone climatic			**Untreated**	**BAS 762 02 F 1 L/ha**		**BAS 9488 0 F 1 L/ha**	
			dt/ha	**dt/ha**	**%UTC**	**dt/ha**	**%UTC**
Maritime	**n = 43**	mean	**33,0**	37,8	**132,1**	37,7	**124,8**
		(min-max)	(3,6-49)	(17,6-53)	(100,9-491)	(8,7-53,4)	(99,4-388,7)
Mediterranean	**n = 4**	mean	**40,4**	43,6	**109,5**	45,2	**115,4**
		(min-max)	(22,9-53)	(26,9-54,4)	(102,5-117,3)	(32-57,8)	(104,9-139,8)
North east	**n = 19**	mean	**34,4**	37,6	**109,7**	37,7	**109,9**
		(min-max)	(23,3-42,8)	(26,5-45,7)	(96,3-136,7)	(24,6-48,9)	(101,2-153,3)
South east	**n = 30**	mean	**29,2**	33,2	**114,3**	32,8	**112,7**
		(min-max)	(16,2-44,3)	(16,7-48)	(101,5-129,4)	(16,7-48,6)	(100,5-131,4)
Total ALL	**n = 96**	mean	**32,4**	36,5	**121,1**	36,5	**117,7**
		(min-max)	(3,6-53)	(16,7-54,4)	(96,3-491)	(8,7-57,8)	(99,4-388,7)

~~Table 3.2-73: Thousand grain weight in presence of disease (in G and % of UTC), Oilseed rape; summary~~

~~EPPO Zone climatic~~			~~Untreated~~	~~BAS 762 02 F 1 L/ha~~		~~BAS 9488 0 F 1 L/ha~~	
			~~G~~	~~G~~	~~%UTC~~	~~G~~	~~%UTC~~
~~Maritime~~	~~n = 42~~	~~mean~~	~~4,7~~	~~4,8~~	~~104,0~~	~~4,9~~	~~104,7~~
	-	~~(min-max)~~	~~(3,7-5,9)~~	~~(3,9-6,1)~~	~~(90,9-112,2)~~	~~(3,9-6,1)~~	~~(87,8-114,7)~~
~~Mediterranean~~	~~n = 4~~	~~mean~~	~~3,9~~	~~3,7~~	~~96,7~~	~~3,9~~	~~99,4~~
	-	~~(min-max)~~	~~(3,4-4,1)~~	~~(3,6-3,9)~~	~~(87,3-107,6)~~	~~(3,5-4,1)~~	~~(92,1-103,5)~~
~~North east~~	~~n = 23~~	~~mean~~	~~4,9~~	~~5,0~~	~~102,4~~	~~5,0~~	~~102,7~~
	-	~~(min-max)~~	~~(4,1-5,5)~~	~~(4,3-5,9)~~	~~(92,4-116,1)~~	~~(4,3-6)~~	~~(96-109,9)~~
~~South east~~	~~n = 31~~	~~mean~~	~~4,3~~	~~4,7~~	~~108,3~~	~~4,7~~	~~108,4~~
	-	~~(min-max)~~	~~(3,4-6,2)~~	~~(3,3-6,5)~~	~~(98,9-123)~~	~~(3,5-6,4)~~	~~(100-119,6)~~
~~Total ALL~~	~~n = 100~~	~~mean~~	~~4,6~~	~~4,8~~	~~104,6~~	~~4,8~~	~~105,2~~
	-	~~(min-max)~~	~~(3,4-6,2)~~	~~(3,3-6,5)~~	~~(87,3-123)~~	~~(3,5-6,4)~~	~~(87,8-119,6)~~

Table 3.2-74: Thousand grain weight in presence of disease (in G and % of UTC), Oilseed rape; summary

EPPO Zone climatic			Untreated G	BAS 762 02 F 1 L/ha G	BAS 762 02 F 1 L/ha %UTC	BAS 9488 0 F 1 L/ha G	BAS 9488 0 F 1 L/ha %UTC
Maritime	**n = 42**	mean	**4,7**	4,8	**104,1**	4,9	**105,0**
		(min-max)	(3,7-5,9)	(3,9-6,1)	(90,9-112,2)	(3,9-6,1)	(87,8-114,7)
Mediterranean	**n = 4**	mean	**3,9**	3,7	**96,7**	3,9	**99,4**
		(min-max)	(3,4-4,1)	(3,6-3,9)	(87,3-107,6)	(3,5-4,1)	(92,1-103,5)
North east	**n = 19**	mean	**4,9**	5,0	**102,7**	5,0	**103,2**
		(min-max)	(4,1-5,5)	(4,3-5,9)	(92,4-116,1)	(4,3-6)	(96-109,9)
South east	**n = 30**	mean	**4,4**	4,7	**108,4**	4,7	**108,5**
		(min-max)	(3,4-6,2)	(3,3-6,5)	(98,9-123)	(3,5-6,4)	(100-119,6)
Total ALL	**n = 95**	mean	**4,6**	4,8	**104,9**	4,8	**105,5**
		(min-max)	(3,4-6,2)	(3,3-6,5)	(87,3-123)	(3,5-6,4)	(87,8-119,6)

~~**Table 3.2-75: Oil content in presence of disease (in % and % of UTC), Oilseed rape; summary**~~

~~EPPO Zone climatic~~			~~Untreated %~~	~~BAS 762 02 F 1 L/ha %~~	~~BAS 762 02 F 1 L/ha %UTC~~	~~BAS 9488 0 F 1 L/ha %~~	~~BAS 9488 0 F 1 L/ha %UTC~~
~~**Maritime**~~	~~**n = 4**~~	~~mean~~	~~**46,1**~~	~~46,5~~	~~**100,8**~~	~~46,6~~	~~**101,1**~~
	-	~~(min-max)~~	~~(43,6-49,4)~~	~~(43,8-49,4)~~	~~(100-102,6)~~	~~(43,9-49,8)~~	~~(99,2-103,5)~~
~~**North east**~~	~~**n = 11**~~	~~mean~~	~~**46,3**~~	~~46,6~~	~~**100,5**~~	~~46,6~~	~~**100,6**~~
	-	~~(min-max)~~	~~(39,1-51,5)~~	~~(39,6-51,3)~~	~~(98,6-102,1)~~	~~(39,1-51,5)~~	~~(99,8-103,4)~~
~~**South east**~~	~~**n = 2**~~	~~mean~~	~~**44,8**~~	~~48,8~~	~~**109,1**~~	~~48,3~~	~~**107,9**~~
	-	~~(min-max)~~	~~(43,1-46,5)~~	~~(48,2-49,4)~~	~~(106,3-111,9)~~	~~(47,4-49,2)~~	~~(105,8-110)~~
~~**Total ALL**~~	~~**n = 17**~~	~~mean~~	~~**46,1**~~	~~46,8~~	~~**101,6**~~	~~46,8~~	~~**101,6**~~
		~~(min-max)~~	~~(39,1-51,5)~~	~~(39,6-51,3)~~	~~(98,6-111,9)~~	~~(39,1-51,5)~~	~~(99,2-110)~~

Table 3.2-62: Oil content in presence of disease (in % and % of UTC), Oilseed rape; summary

EPPO Zone climatic			Untreated %	BAS 762 02 F 1 L/ha %	BAS 762 02 F 1 L/ha %UTC	BAS 9488 0 F 1 L/ha %	BAS 9488 0 F 1 L/ha %UTC
Maritime	**n = 5**	mean	**44,7**	45,2	**101,2**	45,3	**101,7**
		(min-max)	(43,1-46,5)	(43,8-47,7)	(100-102,6)	(43,9-48,1)	(99,2-103,5)
North east	**n = 9**	mean	**46,6**	46,8	**100,5**	46,9	**100,7**
		(min-max)	(44,8-48,8)	(45-49,3)	(98,6-102,1)	(45,2-48,9)	(99,8-103,4)
South east	**n = 3**	mean	**43,6**	45,8	**105**	48,3	**107,9**
		(min-max)	(43,1-46,5)	(39,9-49,4)	(96,9-111,9)	(47,4-49,2)	(105,8-110)
Total ALL	**n = 17**	mean	**45,5**	46,2	**101,5**	46,7	**101,9**
		(min-max)	(43,1-48,8)	(39,9-49,4)	(96,9-111,9)	(43,9-49,2)	(99,2-110)

Sunflower

A total of 75 efficacy trials on sunflower, carried out between 2018 and 2020, have been harvested to confirm the yield response of BAS 762 02 F in the presence of diseases. One trial was not harvested because of extreme lodging. The range of presented trials covers also the application timings up to BBCH 69 which is considered as the worst case scenario.

Yield in dt/ha is represented by 75 results. Summary can be found in Table 3.2-76 63 (single application) and

Table 3.2-77 64 (double application).

Altogether 74 trial results are available for thousand grains weight, see summary in

Table 3.2-78 65 (single application) and

Table 3.2-79 66 (double application).

Altogether 52 trials provided information on oil content, see summary in Table 3.2-80 67 (single application) and

Table 3.2-81 68 (double application).

On thousand grain weight and oil content, the data for standard product were not measured in all trials. Therefore, 2 orthogonal summaries are provided – with and without the standard.

Through results presented across ~~all~~ both EPPO zones, BAS 762 02 F shows that the yield in dt/ha has improved in comparison to the untreated, without any significant negative impact on quality parameters such as thousand grains weight and oil content.

Table 3.2-~~76~~ 63: Yield in presence of disease (in dt/ha and % of UTC), Sunflower, single application; summary

EPPO Zone climatic			Untreated	BAS 762 02 F 1 L/ha		BAS 9488 0 F 1 L/ha	
			dt/ha	dt/ha	%UTC	dt/ha	%UTC
Maritime	**n = 13**	mean	**32,0**	34,6	**110,9**	35,2	**113,0**
		(min-max)	(17,6–47,1)	(23,7–45,3)	(95,3–134,3)	(24,4–45,9)	(95,3–138,4)
South east	**n = 62**	mean	**31,6**	35,7	**119,4**	36,2	**121,2**
		(min-max)	(8,2–60)	(12,7–63,2)	(97,6–390,9)	(13,2–61,4)	(100,8–389,5)
Total ALL	**n = 75**	mean	**31,7**	35,5	**117,9**	36,0	**119,8**
		(min-max)	(8,2–60)	(12,7–63,2)	(95,3–390,9)	(13,2–61,4)	(95,3–389,5)

Table 3.2-~~77~~ 64: Yield in presence of disease (in dt/ha and % of UTC), Sunflower, double application; summary

EPPO Zone climatic			Untreated	BAS 762 02 F 1 L/ha		BAS 762 02 F 2x 1 L/ha		BAS 9488 0 F 1 L/ha	
			dt/ha	dt/ha	%UTC	dt/ha	%UTC	dt/ha	%UTC
Maritime	**n = 5**	mean	**32,6**	34,8	**109,1**	35,3	**110,9**	36,8	**116,2**
		(min-max)	(21,9–47,1)	(27,1–44,9)	(95,3–125,2)	(25,2–43,4)	(92,2–128)	(28,4–44,9)	(95,3–129,9)
South east	**n = 17**	mean	**30,2**	34,8	**122,3**	36,4	**127,2**	35,4	**124,7**
		(min-max)	(11,4–56,2)	(24,1–63,2)	(102,1–264,3)	(23,1–58,9)	(104,8–258,9)	(25,1–60,5)	(103–262,6)
Total ALL	**n = 22**	mean	**30,7**	34,8	**119,3**	36,1	**123,5**	35,7	**122,7**
		(min-max)	(11,4–56,2)	(24,1–63,2)	(95,3–264,3)	(23,1–58,9)	(92,2–258,9)	(25,1–60,5)	(95,3–262,6)

Table 3.2-78 65: Thousand grain weight in presence of disease (in G and % of UTC), Sunflower, single application; summary

EPPO Zone climatic			Untreated	BAS 762 02 F 1 L/ha		BAS 9488 0 F 1 L/ha	
			dt/ha	dt/ha	%UTC	dt/ha	%UTC
Maritime	**n = 13**	mean	**54,8**	56,7	**104,4**	-	-
		(min-max)	(34,2–71,7)	(39,3–71,8)	(93,8–119,1)	-	-
South east	**n = 61**	mean	**58,2**	61,0	**105,6**	-	-
		(min-max)	(31,7–79,6)	(39,1–82,6)	(97–134,8)	-	-
Total ALL	**n = 74**	mean	**57,6**	60,3	**105,4**	-	-
		(min-max)	(31,7–79,6)	(39,1–82,6)	(93,8–134,8)	-	-
	n = 70	mean	**58,0**	60,6	**105,1**	60,9	**105,6**
		(min-max)	(34,2–79,6)	(39,3–82,6)	(93,8–134,8)	(39,7–82,2)	(92,5–138,5)

Table 3.2-~~79~~ 66: Thousand grain weight in presence of disease (in G and % of UTC), Sunflower, double application; summary

EPPO Zone climatic			Untreated	BAS 762 02 F 1 L/ha		BAS 762 02 F 2x 1 L/ha		BAS 9488 0 F 1 L/ha	
			dt/ha	dt/ha	%UTC	dt/ha	%UTC	dt/ha	%UTC
Maritime	**n = 5**	mean	**56,0**	58,3	**104,7**	58,6	**105,2**	58,2	**104,5**
		(min-max)	(39,2–71,7)	(42,2–71,8)	(98,1–115,3)	(41–70,2)	(98–110,5)	(40,9–70,1)	(97,8–110,5)
South east	**n = ~~16~~ 17**	mean	~~56,1~~ **56,2**	59,7	**107,3**	~~61,6~~ 58,7	~~110,7~~ **110,4**	61,1	**109,6**
		(min-max)	(40,3–68,2)	(47,5–70,1)	(100,4–134,8)	(47,3–73,2)	(100–138,5)	(47,4–71,9)	(100,2–138,5)
Total ALL	**n = ~~21~~ 22**	mean	~~56,1~~ **56,2**	59,4	**106,7**	~~60,9~~ 58,7	~~109,4~~ **109,2**	60,4	**108,4**
		(min-max)	(39,2–71,7)	(42,2–71,8)	(98,1–134,8)	(41–73,2)	(98–138,5)	(40,9–71,9)	(97,8–138,5)

Table 3.2-~~80~~ 67: Oil content in presence of disease (in % and % of UTC), Sunflower, <u>single application</u>; summary

EPPO Zone climatic			Untreated	BAS 762 02 F 1 L/ha		BAS 9488 0 F 1 L/ha	
			G	G	%UTC	G	%UTC
Maritime	**n = 9**	mean	**44,6**	45,0	**100,8**	-	-
		(min-max)	(40,8–48,9)	(41,4–49,4)	(97,3–104,4)	-	-
South east	**n = 43**	mean	**45,3**	47,2	**104,4**	-	-
		(min-max)	(37,2–62,5)	(41,3–70,4)	(95–129,5)	-	-
Total ALL	**n = 52**	mean	**45,2**	46,8	**103,7**	-	-
		(min-max)	(37,2–62,5)	(41,3–70,4)	(95–129,5)	-	-
	n = 14	mean	**44,4**	47,3	**106,9**	36,7	**84,0**
		(min-max)	(38,8–48,1)	(44,5–50,2)	(100,4–129,5)	(0–50,8)	(0–130,9)

Table 3.2-~~81~~ 68: Oil content in presence of disease (in % and % of UTC), Sunflower, <u>double application</u>; summary

EPPO Zone climatic			Untreated	BAS 762 02 F 1 L/ha		BAS 762 02 F 2x 1 L/ha		BAS 9488 0 F 1 L/ha	
			%	%	%UTC	%	%UTC	%	%UTC
Maritime	**n = 5**	mean	**44,3**	44,9	**101,5**	45,8	**103,6**	-	-
		(min-max)	(40,8–45,6)	(42,6–46,7)	(97,9–104,4)	(43,2–48,6)	(100–107,6)	-	-
South east	**n = 16**	mean	**45,0**	46,5	**103,7**	46,8	**104,5**	-	-
		(min-max)	(37,2–51,2)	(41,7–51,9)	(99–113,2)	(41,7–52,4)	(99,3–118,5)	-	-
Total ALL	**n = 21**	mean	**44,8**	46,1	**103,2**	46,6	**104,3**	-	-
		(min-max)	(37,2–51,2)	(41,7–51,9)	(97,9–113,2)	(41,7–52,4)	(99,3–118,5)	-	-
	n = 5	mean	**44,4**	47,1	**106,3**	47,0	**106,1**	27,7	**64,8**
		(min-max)	(39,8–47,8)	(45–48,4)	(101,1–113,2)	(44,8–49,1)	(102,1–112,6)	(0–48,2)	(0–112,6)

<u>Wheat</u>

Out of all 24 efficacy trials on wheat, 23 trials have been harvested to confirm the yield response of BAS 762 02 F in the presence of diseases. Trials have been carried out between 2018 and 2019. In one Czech trial, an extreme occurrence of common voles in the field caused inhomogeneous damages on the crop and consequently the yield assessment of the trial was not conducted.

In all 23 trials the following yield parameters were measured:

- yield in dt/ha (summary in Table 3.2-82 69),
- thousand grains weight (summary in
- Table 3.2-83 70)
- hectolitre weight (summary in
- Table 3.2-84 71)

The results presented across both Maritime and North east EPPO zones show that the relative yield has slightly improved without any significant negative impact on quality parameters such as thousand grains weight and oil content.

Table 3.2-~~82~~ 69: Yield in presence of disease (in dt/ha and % of UTC), Wheat; summary

EPPO Zone climatic			Untreated	BAS 762 02 F 1 L/ha		BAS 9314 1 F 0,8 L/ha		BAS 560 00F 0,5 L/ha	
			dt/ha	dt/ha	%UTC	dt/ha	%UTC	dt/ha	%UTC
Maritime	**n=12**	mean	**77,6**	81,5	**105,2**	82,1	**105,7**	78,9	**102,1**
		(min-max)	(49,5-100,7)	(52,5-106,6)	(97,4-114,1)	(52,9-107,3)	(97,9-117,2)	(51-101,5)	(88,5-110,6)
North east	**n=11**	mean	**62,4**	67,6	**108,5**	66,7	**106,5**	67,8	**108,9**
		(min-max)	(48,4-86,1)	(47,8-91,9)	(98,6-122,5)	(48-92,6)	(99,1-113,3)	(53,6-89,7)	(103,2-113,3)
Total ALL	**n=23**	mean	**70,4**	74,9	**106,8**	74,7	**106,1**	73,6	**105,3**
		(min-max)	(48,4-100,7)	(47,8-106,6)	(97,4-122,5)	(48-107,3)	(97,9-117,2)	(51-101,5)	(88,5-113,3)

Table 3.2-~~83~~ 70: Thousand grain weight in presence of disease (in dt/ha and % of UTC), Wheat; summary

EPPO Zone climatic			Untreated	BAS 762 02 F 1 L/ha		BAS 9314 1 F 0,8 L/ha		BAS 560 00F 0,5 L/ha	
			G	G	%UTC	G	%UTC	G	%UTC
Maritime	**n=12**	mean	**39,0**	40,0	**102,5**	39,6	**101,6**	39,5	**101,3**
		(min-max)	(32-43,3)	(33,5-45,7)	(98,6-109,1)	(33,4-44,7)	(96,2-109)	(33,8-44,8)	(96,7-105,8)
North east	**n=11**	mean	**40,2**	41,5	**103,3**	41,5	**103,4**	41,4	**103,1**
		(min-max)	(34,2-47,4)	(35-51,8)	(98,9-112,1)	(34,8-50,6)	(100-109,1)	(34,5-52,1)	(99,8-110,5)
Total ALL	**n=23**	mean	**39,6**	40,7	**102,9**	40,5	**102,5**	40,4	**102,1**
		(min-max)	(32-47,4)	(33,5-51,8)	(98,6-112,1)	(33,4-50,6)	(96,2-109,1)	(33,8-52,1)	(96,7-110,5)

Table 3.2-~~84~~ 71: Hectolitre weight in presence of disease (in dt/ha and % of UTC), Wheat; summary

EPPO Zone climatic			Untreated	BAS 762 02 F 1 L/ha		BAS 9314 1 F 0,8 L/ha		BAS 560 00F 0,5 L/ha	
			kg	kg	%UTC	kg	%UTC	kg	%UTC
Maritime	**n=12**	mean	**76,3**	76,7	**100,5**	76,9	**100,8**	76,7	**100,4**
		(min-max)	(70,8-80,2)	(71,7-81,6)	(99,2-104,1)	(72-80,6)	(99,7-104,2)	(71,3-82,2)	(98,7-103,1)
North east	**n=11**	mean	**72,2**	73,2	**101,4**	73,2	**101,5**	73,1	**101,3**
		(min-max)	(56-79,3)	(56,8-79,4)	(100-108,1)	(57-79,2)	(99,9-108,1)	(57,1-79,2)	(98,9-107,8)
Total ALL	**n=23**	mean	**74,4**	75,0	**101,0**	75,2	**101,2**	74,9	**100,9**
		(min-max)	(56-80,2)	(56,8-81,6)	(99,2-108,1)	(57-80,6)	(99,7-108,1)	(57,1-82,2)	(98,7-107,8)

Summary and conclusion

Results obtained with altogether ~~202~~ 210 efficacy trials (~~102~~ 110 on oilseed rape, 76 on sunflower and 24 on wheat) proved that BAS 762 02 F is an efficient fungicide on *Sclerotinia sclerotiorum*, *Alternaria* species, *Erysiphe cruciferarum* and *Neopseudocercosporella brassicae* in oilseed rape, *Diaporthe helianthi*, *Plenodomus lindquistii*, *Sclerotinia sclerotiorum* and *Alternaria helianthi* in sunflower and *Oculimacula yallundae* ~~species~~, *Zymoseptoria tritici* and *Blumeria graminis* in wheat.

Beside the efficacy of the product, the results demonstrated a yield increase after application of BAS 762 02 F and no negative impact of the product on quantitative and qualitative yield parameters.

The submitted data support the claim for registration of BAS 762 02 F as required in the GAP.

Comments of zRMS on:
efficacy (3.2.3)

Efficacy data package for evaluation of the new fungicide BAS 762 02 F includes a total of 210 trials carried out in the years 2018-2020 in four EPPO zones: Maritime (CZ, DE, DK, DE, FR, UK, SE), North-East (PL, LT, LV), South-East (HU, SK, RO) and additionally Mediterranean zone (FR). A range of trial locations allows to evaluate the performance of BAS 762 02 F in all the Member States (AT, BE, DE, PL, IE, CZ, HU, RO, SI, SK) for which the authorisation is sought. All the trials were carried out by officially GEP-recognized testing units. The trials were carried out with BAS 762 02 F or BAS 762 00 F, for which similarity has been proved in a range of bridging trials presented in a separate chapter (Preliminary tests (3.2.1)). For simplification, only the code name BAS 762 02 F will be used in the assessment. BAS 762 02 F is intended to be used for the control of *Sclerotinia sclerotiorum* (SCLESC), *Alternaria* spp. (ALTESP), *Erysiphe cruciferarum* (ERYSCR) and *Neopseudocercosporella brassicae* (MYCOBR) in oilseed rape (BRSNW, BRSNS) within the crop stage ranging from BBCH 57-75; for the control of *Diaporthe helianthi* (DIAPHE), *Plenodomus lindquistii* (LEPTLI), *Sclerotinia sclerotiorum* (SCLESC), *Alternaria helianthi* (ALTEHE) in sunflower at growth stage BBCH 31-69 and for the control of *Pseudocercosporella herpotrichoides* (PSDCHE), *Septoria tritici* (SEPTTR) and *Blumeria graminis* (ERYSCR) in wheat (TRZAW and TRZAS) at growth stage BBCH 30-49.
Conclusions from the evaluation have been summarized separately for individual claimed uses listed in the GAP table.

OILSEED RAPE / SCLESC – 87 trials [36 MAR (CZ, DE, FR, SE) + 20 NE (PL, LV, LT) + 31 SE (HU, RO, SK)]; Tables: 3.2-32, 3.2-33
All the trials were carried out in winter oilseed rape cultivars across three EPPO zones. No trials were conducted in spring oilseed rape. Trials were conducted in three growth seasons 2019, 2020 and 2021. At the time of application

the growth stage of the crop ranged from 61-73. The average efficacy of BAS 762 02 F applied once at dose rate of 1 L/ha was above 80% in each EPPO zone. The average efficacy of standard BAS 9488 0 F was comparable to BAS 762 02 F.
For the Member States from South-East zone and for Czech Republic the range of dose rates 0,6-1 L/ha is claimed. Efficacy of BAS 762 02 F at lower dose rate of 0,6 L/ha is presented in a separate chapter (Minimum Effective Dose 3.2.2). Moderate level of control was achieved for lower dose rate in SE zone (about 72% efficacy). Efficacy of about 80% was demonstrated in the trials conducted in Maritime zone, indicating that efficacy from 18 CZ trials ranged from 51,6% to 100% (detailed data from individual trials are presented in Biological Assessment Dossier).
BAS 762 02 F is intended to be applied at growth stage ranging from BBCH 57-75. 9 out of 87 trials submitted by the applicant presents efficacy results for BAS 762 02 F applied at three application timings (BBCH: 55-59, 61-65, 71-75). Application at flowering (BBCH 61-65) is the most effective (efficacy: about 91% for MAR zone, about 83% for NE zone and 68% for SE zone). Earlier and later application timings give lower efficacy results (average efficacy from three zones was about 67% for earlier application and about 54% for later application). Range of applications timings allow farmer to use the fungicide according to actual needs depending on diseases pressure or weather conditions.
No efficacy trials were carried out in spring oilseed rape in any of the concerned EPPO zones and the concerned MSs are kindly advised to consider individually possible extrapolation of efficacy trial results from winter oilseed rape to the spring oilseed rape, according to the national requirements and make a decision concerning acceptance of this use on the national level.

OILSEED RAPE / ALTESP – 16 trials [12 MAR (CZ, FR, DK, DE) + 3 NE (PL, LV) + 1 SE (HU)]; Table: 3.2-34
Trials were conducted only in winter oilseed rape cultivars in 2018, 2019 and 2020. At the time of application the growth stage of the crop ranged from BBCH 55-73. The highest efficacy (about 92%) for BAS 762 02 F applied once at dose rates of 1 L/ha. was noted in the South-East zone. For Maritime zone and North-East zone the average efficacy was about 71% and about 67% respectively. 7 trials from neighbouring countries from MAR zone (CZ and DE trials) support the evaluation of BAS 762 02 F in the control of ALTESP in North East zone, giving the average efficacy about 75%. The average efficacy from three zones altogether was about 72%. Standard BAS 9488 0 F performed comparably as BAS 762 02 F in each EPPO zone.
For the Member States from South-East zone and for Czech Republic the range of dose rates 0,6-1 L/ha is claimed. Efficacy data for lower dose rate of 0,6 L/ha is available only from MAR zone and is presented below. No data from South-East zone is available.

BRSNW /ALTESP – 5 MAR trials (CZ-3, FR-2)

EPPO Zone climatic			**Untreated**	**BAS 762 02 F 0,6 L/ha**		**BAS 762 02 F 1 L/ha**		**BAS 9488 0 F 1 L/ha**	
			infect	**infect**	**infect**	**infect**	**efficacy**	**infect**	**efficacy**
Maritime	**n=5**	mean	**16,1**	5,7	**63,5**	4,4	**72,6**	3,6	**78**
		(min-max)	(8,6-25)	(3,67-10)	(51,6-77,1)	(1,3-10)	(55,4-100)	(1,8-7,5)	(70-87,5)

Moderate level of control was achieved for lower dose rate in MAR zone (about 64% efficacy). Efficacy from 3 CZ trials was: 72%, 60% and 77,1% (detailed data is contained in individual trial reports).

No efficacy trials were carried out in spring oilseed rape in any of the concerned EPPO zones and the concerned MSs are kindly advised to consider individually possible extrapolation of efficacy trial results from winter oilseed rape to the spring oilseed rape, according to the national requirements and make a decision concerning acceptance of this use on the national level.
For South-East zone only one trial is available, in which BAS 762 02 F is applied only at dose rate of 1 L/ha. Due to limited efficacy data for South East zone and no trial results for lower dose rate 0,6 L/ha, the concerned MSs are kindly advised to consider individually possible extrapolation of efficacy trial results from other zones, according to the national requirements and make a decision concerning acceptance of this use on the national level.

OILSEED RAPE / ERYSCR – 12 trials [4 MAR (CZ, FR) + 4 NE (PL) + 4 MED (FR)]; Tables: 3.2-35, 3.2-36
Trials were carried out in 2018 and 2019 in winter oilseed rape. At the time of application the growth stage of the crop ranged from BBCH 61-67. A moderate level of efficacy (above 60%) was demonstrated in each EPPO zone. The performance of standard BAS 9488 0 F was comparable to BAS 762 02 F. 4 additional trials from MED zone have been submitted by the applicant to support this use in Maritime zone with efficacy results about 64%. To support the evaluation in North East zone 3 trials from CZ are presented together with PL trials additionally giving the efficacy about 63%.

For Czech Republic the range of dose rates 0,6-1 L/ha is claimed. Efficacy data for lower dose rate of 0,6 L/ha from MAR zone (CZ and FR) is available and presented below.

BRSNW / ERYSCR – 3 MAR trials (CZ-2, FR-1)

EPPO Zone climatic			Untreated	BAS 762 02 F 0,6 L/ha		BAS 762 02 F 1 L/ha		BAS 9488 0 F 1 L/ha	
			infect	infect	infect	infect	efficacy	infect	efficacy
Maritime	**n=3**	mean	**58,5**	32,1	**51,7**	26,7	**59,4**	19,2	**68,4**
		(min-max)	(18,2-85)	(5,45-50)	(41,2-70,5)	(4,9-43,8)	(48,5-73,1)	(5,1-27,5)	(65,5-72)

BAS 762 02 F at dose rate of 0,6 L/ha was less effective than applied at dose rate of 1 L/ha achieving about 52% efficacy. Efficacy from 2 CZ trials was: 41,2 and 43,4% (detailed data is contained in individual trial reports).

No efficacy trials were carried out in spring oilseed rape in any of the concerned EPPO zones and the concerned MSs are kindly advised to consider individually possible extrapolation of efficacy trial results from winter oilseed rape to the spring oilseed rape, according to the national requirements and make a decision concerning acceptance of this use on the national level.
For MAR zone only 4 trials are available, and the evaluation of this use is supported by additional 4 trials from MED zone. The concerned MSs are kindly advised to consider the acceptance of additional supporting trials and consider individually possible extrapolation of efficacy trial results from PL and make a decision concerning acceptance of this use on the national level.

OILSEED RAPE / MYCOBR – 5 MAR trials (FR); Table 3.2-37
The applicant has submitted only 5 trials carried out in France only in one growth season 2019. At the time of application the growth stage of the crop ranged from 63-69. BAS 762 02 F was about 60% effective. The efficacy of reference product BAS 9488 0 F was higher (about 69%).
For Czech Republic the range of dose rates 0,6-1 L/ha is claimed. Efficacy data for lower dose rate of 0,6 L/ha is available and presented below.

BRSNW MYCOBR – data for MAR (FR)

EPPO Zone climatic			Untreated	BAS 762 02 F 0,6 L/ha		BAS 762 02 F 1 L/ha		BAS 9488 0 F 1 L/ha	
			infect	infect	infect	infect	efficacy	infect	efficacy
Maritime	**n=4**	mean	**15,5**	7,1	**53,1**	6,5	**56,8**	5	**67**
		(min-max)	(9,8-25,4)	(1,97-12,52)	(28,5-85,2)	(1,8-11,5)	(31,9-86,5)	(1,7-8,9)	(49,4-87,5)

BAS 762 02 F at dose rate of 0,6 L/ha was less effective than applied at dose rate of 1 L/ha achieving about 53% efficacy. (detailed data is contained in individual trial reports).

No efficacy trials are available for NE EPPO zone.
No efficacy trials were carried out in spring oilseed rape in any of the concerned EPPO zones and the concerned MSs are kindly advised to consider individually possible extrapolation of efficacy trial results from winter oilseed rape to the spring oilseed rape, according to the national requirements and make a decision concerning acceptance of this use on the national level.
Due to limited efficacy data – only 5 trials carried out in BRSNW available only from one MS (FR), the concerned MSs are kindly advised to consider the acceptance of this use according to the national requirements and make a decision concerning acceptance of this use on the national level.

HELAN / DIAPHE – 25 trials [5 MAR (CZ, FR) + 20 SE (RO, SK)]; Tables: 3.2-40, 3.2-41
Efficacy trials were carried out in the years 2018-2020. At the time of application the growth stage of the crop ranged from BBCH 31-69. BAS 762 02 F was applied once (25 trials) or twice (4 trials) in growing season. Assessments on the leaves or stems have been presented.
BAS 762 02 F applied once was effective in both EPPO zones, but the results achieved in SE zone are visibly better (about 87% efficacy on leaves and about 85% efficacy on stems) comparing with results from MAR zone (about 62% efficacy on leaves and about 68% efficacy on stems). The average efficacy from both zones, summing up 25 trials was about 84% on the leaves and about 81% on stems. The efficacy of standard BAS 9488 0 F was comparable to BAS 762 02 F in SE zone and visibly lower than BAS 762 02 F in MAR zone. Comparing results from both zones altogether, the efficacy was on the similar level.
For double application in SE zone, the average efficacy from 3 available trials was above 90% on leaves and the

similar effects were obtained for BAS 762 02 F and for standard applied once. Data from only one trial is available for MAR zone, where the efficacy on leaves was about 60% after double application and about 72% after single application of BAS 762 02 F. Standard BAS 9488 0F was about 61% effective.
The range of dose rates 0,6-1 L/ha is claimed for SE zone and for MAR zone (only CZ). Efficacy of BAS 762 02 F at lower dose rate of 0,6 L/ha applied once and twice is presented in a separate chapter (Minimum Effective Dose 3.2.2). After single application of BAS 762 02 F at dose rate of 0,6 L/ha the efficacy was about 59% on leaves, about 67% on stems (results from 2 FR trials), and about 78% on leaves; about 73% on stems (results from 13 trials) in MAR and SE zone respectively. Summing up 15 trial results from both zones the average efficacy was above 70% on leaves and stems. For double application of BAS 762 02 F at dose rate of 0,6 L/ha results from 1 trial are available with efficacy about 87% - significantly higher comparing with single application (about 62% efficacy for BAS 762 02 F at dose rate of 0,6 L/ha) in this trial. The difference was about 25% in favor of double application of tested fungicide.
No efficacy trials are available for NE EPPO zone.
Due to limited efficacy data from MAR zone (5 trials) the concerned MSs are kindly advised to consider individually possible extrapolation of efficacy trial results from SE zone, according to the national requirements and make a decision concerning acceptance of this use on the national level.

HELAN / LEPTLI – 37 trials [9 MAR (CZ, FR) + 28 SE (BG, HU, RO, SK)]; Tables 3.2-42, 3.2-43
Trials were carried out in 2018, 2019 and 2020. At the time of application the growth stage of the crop ranged from BBCH 31-69. Results on stems after single and double application of BAS 762 02 F have been presented (37 and 13 trials respectively).
Efficacy of BAS 762 02 F applied once at dose rate of 1 L/ha was about 68% and 75% in MAR and SE zone respectively. For both zones altogether the average efficacy was about 73%. The reference product BAS 9488 0 F was effective on the similar level as BAS 762 02 F.
BAS 762 02 F applied twice at dose rate of 1 L/ha was about 70% effective in MAR zone (results from 4 trials) and was 85% effective in SE zone (results from 9 trials). Comparing results from single and double application in these trials, the difference in efficacy was 5% and about 13% in favor of the double application in MAR and SE EPPO zone respectively.
The range of dose rates 0,6-1 L/ha is claimed for SE zone and for MAR zone (only CZ). Efficacy results of BAS 762 02 F at lower dose rate of 0,6 L/ha applied once and twice are presented in a separate chapter (Minimum Effective Dose 3.2.2). BAS 762 02 F applied once at dose rate of 0,6 /ha was effective of about 58% in MAR (7 trials) and SE zone (19 trials). The efficacy in 4 CZ trials ranged from 31% to about 69% (detailed data from individual trials are presented in Biological Assessment Dossier).The efficacy of standard BAS 9488 0 F was comparable or higher than efficacy of BAS 762 02 F at 0,6 L/ha in MAR and SE zone respectively.
BAS 762 02 F applied twice at dose rate of 0,6 L/ha was about 78% effective in MAR zone (results 1 CZ trial) and was 86% effective in SE zone (results from 5 trials). Comparing results from single and double application in these trials, the difference in efficacy was about 9% and about 17% in favor of the double application in MAR and SE EPPO zone respectively.
No efficacy trials are available for NE EPPO zone.

HELAN / SCLESC – 16 trials [5 MAR (CZ) + 11 SE (HU, SK)], Tables 3.2-44, 3.2-45
Trials were conducted the years 2018-2020. At the time of application the growth stage of sunflower ranged from BBCH 32-69. BAS 762 02 F was applied once (16 trials) or twice (5 trials) in growing season. Assessments on the leaves and stems have been presented.
BAS 762 02 F applied once was effective in both EPPO zones, but the results achieved in SE zone were visibly better (100% efficacy on leaves and 80% efficacy on stems) comparing with results from MAR zone (about 59% efficacy on stems). The average efficacy from both zones, summing up 16 trials was 100% on the leaves and about 73% on stems. The efficacy of standard BAS 9488 0 F was higher in MAR zone and the same on leaves or lower on stems in SE zone. Comparing results from both zones altogether, the average efficacy of BAS 762 02 F and standard was on the similar level.
After double application of BAS 762 02 F at dose rate of 1 L/ha in SE zone, the average efficacy was about 94% on stems (results from 3 trials) and 100% on leaves (result from 1 trial) and slightly lower effects on stems were obtained for BAS 762 02 F applied once (difference about 2%). The efficacy of standard was the same on the leaves and lower on stems. Data from only one trial is available for MAR zone, where the efficacy on stems was 54% after double application and 56% after single application of BAS 762 02 F. Standard BAS 9488 0 F was more effective in this zone.
Dose rate range 0,6-1 L/ha is claimed for SE zone and for MAR zone (only CZ). Efficacy of BAS 762 02 F at lower dose rate of 0,6 L/ha applied once and twice is presented in a separate chapter (Minimum Effective Dose 3.2.2). After single application of BAS 762 02 F at dose rate of 0,6 L/ha the efficacy on stems was about 52% (results from 3 CZ trials), and about 75% (results from 6 trials) in MAR and SE zone respectively. Summing up 9 trial results

from both zones the average efficacy was above 67%. After double application of BAS 762 02 F at dose rate of 0,6 L/ha results from 2 trials are available. BAS 762 02 F applied twice at dose rate of 0,6 L/ha was about 68% effective in MAR zone and was 100% effective in SE zone. Comparing results from single and double application, the difference in efficacy was about 12% in favor of the double application in SE EPPO zone. No difference between single and double application was noted in one trial conducted in MAR zone.
No efficacy trials are available for NE EPPO zone.
Due to limited efficacy data from MAR zone (5 trials) the concerned MSs are kindly advised to consider individually possible extrapolation of efficacy trial results from SE zone, according to the national requirements and make a decision concerning acceptance of this use on the national level.

HELAN / ALTEHE – 39 trials; 36 valid trials [5 MAR (CZ, FR) + 31 SE (BG, RO, HU, SK)]; Tables: 3.2-46, 3.2-47
Trials were carried out in 2018, 2019 and 2020. At the time of application the growth stage of the crop ranged from BBCH 31-69. Results on stems or leaves after single and double application of BAS 762 02 F have been presented (36 and 12 trials respectively). Assessments on the leaves and stems have been presented.
BAS 762 02 F applied once was visibly more effective in SE EPPO zone (about 77% efficacy on leaves and about 75% efficacy on stems) comparing with results from MAR zone (about 52% efficacy on leaves and about 48% efficacy on stems). The average efficacy from both zones, summing up 36 trials was about 74% on leaves and about 69% on stems. The efficacy of standard BAS 9488 0 F was comparable to BAS 762 02 F in SE zone and visibly lower than BAS 762 02 F in MAR zone. Comparing results from both zones altogether, the efficacy was on the similar level. 3 trials carried out in FR (1) and HU (2) have been excluded from the evaluation. No efficacy was demonstrated for BAS 762 02 F and for reference product in these trials in which fungicides were applied at the earliest time of use: at BBCH 30-32 – earlier than in the rest of the submitted trials. Additional remark on the label is to be considered by MSs regarding eventual later application time for ALTEHE control in sunflower.
After double application of BAS 762 02 F at dose rate of 1 L/ha in SE zone, the average efficacy from 10 trials was about 84% on leaves and stems. After single application, BAS 762 02 F was about 56% effective on leaves and about 66% effective on stems in these trials. Comparing results from single and double application, the difference in efficacy was about 28% on leaves and about 18% on stems in favor of the double application in SE EPPO zone. Reference product BAS 9488 0 F was visibly less effective on leaves and slightly less effective on stems compared to BAS 762 02 F applied twice. Two trials with double application of BAS 762 02 F have been submitted for MAR zone. The efficacy on stems, after double application of BAS 762 02 F was about 64%, and was significantly higher than after single application of BAS 762 02 F (about 24% efficacy) in these trials. The difference was about 39% in favor of double application of tested product. Standard was visibly less effective compared to BAS 762 02 F applied twice in these trials. No efficacy has been noted on leaves after single application of BAS 762 02 F and reference product (result from only 1 trial). After double application, BAS 762 02 F was about 28% effective on leaves in this single trial.
Dose rate range 0,6-1 L/ha is claimed for SE zone and for MAR zone (only CZ). Efficacy of BAS 762 02 F at lower dose rate of 0,6 L/ha applied once and twice is presented in a separate chapter (Minimum Effective Dose 3.2.2). After single application of BAS 762 02 F at dose rate of 0,6 L/ha the efficacy was about 56% on leaves (results from 2 trials), about 40% on stems (results from 3 trials), and about 60% on leaves (results from 21 trials) and about 56% on stems (results from 7 trials) in MAR and SE zone respectively. The efficacy in CZ trials ranged from about 33% on stems to about 63% on leaves% (detailed data from individual trials are presented in Biological Assessment Dossier). Summing up 28 trial results from both zones the average efficacy was about 60% on leaves and about 51% on stems. For double application of BAS 762 02 F at dose rate of 0,6 L/ha results from 1 CZ trial are available for MAR zone with efficacy about 47% for single and double application of BAS 762 02 F at dose rate of 0,6 L/ha. For SE zone results from 7 trials have been presented. BAS 762 02 F applied twice at dose rate of 0,6 L/ha was about 79% effective on leaves (results from 7 trials) and was about 82% effective on stems (results from 2 trials) in this zone. After single application of BAS 762 02 F the efficacy was about 35% on leaves and 43% on stems. Comparing results from single and double application in these trials, the difference in efficacy was about 44% on leaves and about 39% on stems in favor of the double application in SE EPPO zone.

No efficacy trials are available for NE EPPO zone.
Due to limited data from MAR zone (5 trials) and low efficacy results the concerned MSs are kindly advised to consider individually possible extrapolation of efficacy trial results from SE zone, according to the national requirements and make a decision concerning acceptance of this use on the national level.

Reduction of stem and head breaking in HELAN; Tables: 3.2-48, 3.2-49, 3.2-50, 3.2-51

Data on the effect of BAS 762 02 F at dose rate of 1 L/ha on stem breaking (28 trials with single application from: MAR zone (10), SE zone (18) and 7 trials with double application from: MAR zone (3), SE zone (7)) and head

breaking (22 trials with single application from: MAR zone (6), SE zone (16) and 6 trials with double application from: MAR zone (2), SE zone (4)) in sunflower has been submitted to evaluation. Clearly beneficial effect of tested fungicide manifested as a reduction of stem breaking and head breaking was shown in 23 and 21 trials respectively. Summing up data from both zones the average reduction of stem breaking was 6,2% after single application and 7,7% after double application of BAS 762 02 F. The average reduction of head breaking was 6,1% after single application and 8,6% after double application of tested fungicide. Based on the submitted data a slight increase of stem and head breaking reduction has been observed after double application of BAS 762 02 F. Similar or less effective results have been noted for reference product (BAS 9488 0F).

It can be concluded that BAS 762 02 F at dose rate of 1 L/ha has a beneficial effect on the reduction of stem and head breaking in sunflower

WHEAT / PSDCHE – 22 trials; 19 valid trials [9 MAR (CZ, DK, FR, DE, UK) + 10 NE (PL, LT, LV)]; Tables: 3.2-56, 3.2-57

Trials were carried out in winter wheat in the years 2018-2019, across two EPPO zones. No trials were conducted in spring wheat cultivars. Crop stage at the time of application ranged from 30-32. The average efficacy of BAS 762 02 F applied once at dose rate of 1 L/ha was about 71% in MAR zone and about 79% in NE zone. Summing up 19 trials from 2 EPPO zone the average efficacy was about 75%. Standards: BAS 9314 1 F and BAS 560 00 F performed visibly less effective than BAS 762 02 F. 3 trials have been excluded from the evaluation due to very high disease pressure at the time of application and hence strong curative treatment, which resulted in a very low efficacy (about 13% for BAS 762 02 F and about 17 % – 19% for standards). BAS 762 02 F is intended to be applied preventively and when the first symptoms of disease occur – hence it is justifiable to exclude these trials with strong curative treatment.

For Czech Republic the range of dose rates 0,6-1 L/ha is claimed. Efficacy of BAS 762 02 F at lower dose rates: 0,6 L/ha and 0,7 L/ha is presented in a separate chapter (Minimum Effective Dose 3.2.2). BAS 762 02 F at dose rate of 0,6 L/ha was about 64% effective in MAR zone (results from 3 trials). The efficacy of tested fungicide at dose rate of 0,7 L/ha was about 62% in MAR (results from 6 trials). Efficacy from 3 CZ trials ranged from 47,5% to about 71% (detailed data from individual trials are presented in Biological Assessment Dossier).

Due to no efficacy trials were carried out in spring wheat in any of the concerned EPPO zones, the concerned MSs are kindly advised to consider individually possible extrapolation of efficacy trial results from winter wheat to the spring wheat, according to the national requirements and make a decision concerning acceptance of this use on the national level.

WHEAT / SEPTTR – 11 trials [8 MAR (CZ, DK, DE, UK) + 3 NE (PL)], Table 3.2-58

Trials were conducted in winter wheat in two growing seasons: 2018 and 2019 in two EPPO zones. Crop stage at the time of application ranged from 30-32. No trials were conducted in spring wheat cultivars. The average efficacy of BAS 762 02 F applied once at dose rate of 1 L/ha was about 76% in MAR zone and 82% in NE zone. Adding 5 trials from CZ and DE to support the evaluation in NE zone, the efficacy was about 83%. Summing up 11 trials from 2 EPPO zone the average efficacy was about 77%. Standard BAS 560 00 F performed visibly less effective than BAS 762 02 F. The efficacy of reference product BAS 9314 1 F was similar or lower than efficacy of BAS 76202 F.

For Czech Republic the range of dose rates 0,6-1 L/ha is claimed. Efficacy of BAS 762 02 F at lower dose rates: 0,6 L/ha and 0,7 L/ha is presented in a separate chapter (Minimum Effective Dose 3.2.2). BAS 762 02 F at dose rate of 0,6 L/ha was about 69% effective in MAR zone (results from 4 trials). The efficacy of tested fungicide at dose rate of 0,7 L/ha was about 64% in MAR zone (results from 4 trials). Efficacy from 2 CZ trials was 65,4% and 83,7% (detailed data from individual trials are presented in Biological Assessment Dossier).

Due to no efficacy trials were carried out in spring wheat in any of the concerned EPPO zones, the concerned MSs are kindly advised to consider individually possible extrapolation of efficacy trial results from winter wheat to the spring wheat, according to the national requirements and make a decision concerning acceptance of this use on the national level.

WHEAT/ ERYSGR 10 trials [2 MAR (CZ, DK) + 8 NE (PL, LV)]; Table 3.2-59

Trials were conducted only in winter wheat cultivars in the years 2018-2019 in two EPPO zones. At the time of application the growth stage of wheat ranged from BBCH 30-32. BAS 762 02 F was applied once in growing season. Summing up results from 10 trials from 2 EPPO zones the average efficacy of BAS 762 02 F was about 77%. BAS 762 02 F was about 78% and about 77% effective in MAR and NE zone respectively. To support the evaluation, results from PL have been also compiled with MAR trial results giving about 75% efficacy. Adding 1 trial from CZ to support the evaluation in NE zone the efficacy was about 78%. The efficacy of standard BAS 9314 1 F was similar or lower than efficacy of BAS 762 02 F. Standard BAS 560 00 F performed at the same level or better (only in MAR zone) than BAS 762 02 F.

Dose rate range 0,6-1 L/ha is claimed for Czech Republic. Efficacy data for lower dose rates: 0,6 L/ha and 0,7 L/ha is available from MAR zone supported with data from PL and is presented below.

TRZAW /ERYSGR – data for MAR (DK, CZ) + supporting data from PL

EPPO Zone climatic		Untreated	BAS 762 02 F 0,7 L/ha		BAS 762 02 F 1 L/ha		BAS 9314 1 F 0,8 L/ha		BAS 560 00 F 0,5 L/ha	
		infect	infect	efficacy	infect	efficacy	infect	efficacy	infect	efficacy
Maritime n=4	mean (min-max)	**10,4** (7,5-15,7)	2,3 (0,4-5,48)	**81,4** (65,1-97,4)	2,1 (0,1-5,4)	**83** (65,9-98,8)	2,3 (0,1-4,8)	**78,1** (44,1-99,7)	1,7 (0,3-5,1)	**86,9** (67,3-97,7)

EPPO Zone climatic		Untreated	BAS 762 02 F 0,6 L/ha		BAS 762 02 F 1 L/ha		BAS 9314 1 F 0,8 L/ha		BAS 560 00 F 0,5 L/ha	
		infect	infect	efficacy	infect	efficacy	infect	efficacy	infect	efficacy
Maritime n=5	mean (min-max)	**11,9** (5-23,3)	5,7 (0,94-11,5)	**57,3** (40,5-81,2)	4,3 (0,7-9,4)	**68,4** (53,5-86,3)	4,3 (0,8-10)	**68,6** (48,6-85,9)	6,1 (0,6-12,9)	**62,1** (44,6-88,8)

BAS 762 02 F at dose rate of 0,6 L/ha was about 57% effective (results from 5 trials). The efficacy of tested fungicide at dose rate of 0,7 L/ha was about 81% (results from 4 trials). Efficacy from 1 CZ trial was 81,2% (detailed data is contained in individual trial reports).
Due to no efficacy trials were carried out in spring wheat in any of the concerned EPPO zones, the concerned MSs are kindly advised to consider individually possible extrapolation of efficacy trial results from winter wheat to the spring wheat, according to the national requirements and make a decision concerning acceptance of this use on the national level.
For MAR zone only 2 trials are available, and the evaluation of this use is supported by additional 9 trials from NE zone (PL). The concerned MSs are kindly advised to consider individually the possible extrapolation of efficacy trial results from PL and make a decision concerning acceptance of this use on the national level.

Based on the submitted efficacy trial results it can be concluded that the fungicide BAS 762 02 F is effective in the control of target pathogens which are the subject of the evaluation. For some uses for which the authorization is sought (ALTESP /oilseed rape / SE zone; DIAPHE, SCLESC, ALTEHE/ sunflower/ MAR zone; ERYSCR/ TRZAW/ MAR) due to not sufficient efficacy data, the decision of acceptance is to be confirmed on the national level according to the national requirements.
No trials results are available for spring oilseed rape and spring wheat in any of the concerned EPPO zones and for sunflower and MYCOBR in winter oilseed rape in NE EPPO zone. The decision of acceptance of these uses is to be made on the national level.
According to the comments received from cMSs the following crops have been finally accepted:

- BRSNS, TRZAS (AT, DE)
- HELAN (AT)

The claimed uses not accepted are as follows:

- BRSNN: MYCOBR (DE)

Yield (and relevant quality indicators), from efficacy trials (in the presence of challenging pest populations) (3.2.3); Tables: 3.2-60 - 3.2-71

YIELD

OILSEED RAPE
Yield was recorded in a total of 96 efficacy trials carried out in four EPPO zones (MAR – 43 trials, MED – 4 trials, NE – 19 trials and SE – 30 trials). The average yield for all zones was higher by over 20% calculated for plots treated with BAS 762 02 F at dose rate of 1 L/ha, compared with the yield from untreated plots. The highest increase of the yield was noted in Maritime zone (over 30%). The average yield was higher by about 10%, 10% and 14% in MED, NE and SE zone respectively, compared with untreated plots. In individual trials, the yield achieved from plots treated with BAS 762 02 F at dose rate of 1 L/ha was usually comparable (50 trials) or statistically higher (46 trials: MAR (23), NE (8), SE (15)), than yield from untreated plots. Comparing BAS 762 02 F with standard (BAS 9488 0 F), no statistically significant differences were noted for the yield in most of the trials.

SUNFLOWER
A total of 75 trial results are available for yield content, after single application of BAS 762 02 F at dose rate of 1 L/ha (MAR zone – 13 trials, SE zone - 62 trials). Additionally 22 trials (5 trials from MAR zone and 17 trials from SE zone) provide yield data after double application of tested fungicide. After single application, BAS 762 02 F gave increase of the yield from about 11% (MAR zone) to over 19% (SE zone). The average increase of the yield from both zones was almost 18%. After double application, the increase of the yield was: almost 11%, about 27% and almost 24% for MAR zone, SE zone and both zones respectively. In individual trials, the yield achieved from the plots treated once with BAS 762 02 F was usually comparable (46 trials) or statistically higher (29 trials from SE zone) than yield from untreated plots. The yield harvested from the plots treated twice with BAS 762 02 F was comparable (11 trials) or statistically higher (11 trials: SE (10), MAR (1)), than yield from untreated plots. Comparing BAS 762 02 F with standard (BAS 9488 0 F), no statistically significant differences were noted for the yield in most of the trials.

WHEAT
Yield was harvested and recorded in a total of 23 efficacy trials carried out in two EPPO zones (MAR zone – 12 trials, NE zone – 11 trials). The average yield was higher by about 5%, 9% and almost 7% in MAR zone, NE zone and both zones respectively, compared with untreated plots. In individual trials the yield achieved from plots treated with BAS 762 02 F at dose rate of 1 L/ha was usually comparable (15 trials) or statistically higher (8 trials: MAR (2) , NE (6)), than yield from untreated plots. Comparing BAS 762 02 F with reference products (BAS 9314 1F and BAS 560 00 F), no statistically significant differences were noted for the yield in most of the trials.

YIELD QUALITY

OILSEED RAPE (TGW, oil content)
TGW was assessed in a total of 95 efficacy trials carried out in four EPPO zones (MAR – 42 trials, MED – 4 trials, NE – 19 trials and SE – 30 trials). The average TGW value calculated for BAS 762 02 F at dose rate of 1 L/ha was higher by about 4%, 3% and 8% in MAR, NE and SE zone respectively, compared with the values calculated for untreated plots. In MED zone the average TGW value was lower by about 3%, compared with untreated control. In individual trials, TGW calculated for plots treated with BAS 762 02 F at dose rate of 1 L/ha was usually comparable (68 trials) or statistically higher (27 trials: MAR (10), NE (4), SE (13)), than TGW calculated for untreated plots. Comparing BAS 762 02 F with standard (BAS 9488 0 F), no statistically significant differences were noted for TGW in most of the trials.
17 trials provided data on oil content (5 trials from MAR zone, 9 trials from NE zone and 3 trials from SE zone). The average oil content calculated for BAS 762 02 F at dose rate of 1 L/ha was higher by about 1%, 0,5%, 5% and about 2% in MAR, NE, SE and for all zones respectively, compared with untreated plots. In individual trials oil content calculated for BAS 762 02 F at dose rate of 1 L/ha was usually comparable (15 trials) or statistically higher (2 trials from SE zone), than oil content calculated for untreated plots. Comparing BAS 762 02 F with standard (BAS 9488 0 F), no statistically significant differences were noted for the oil content in most of the trials.
SUNFLOWER (TGW, oil content)
74 trial results have been submitted for TGW calculated for single application of BAS 762 02 F at dose rate of 1 L/ha (13 trials from Maritime zone and 61 trials from SE zone). Additionally 22 trials (5 from MAR zone and 17 from SE zone) provide data on TGW after double application of tested fungicide. After single application, BAS 762 02 F gave increase of TGW value from about 4% (MAR zone) to about 6% (SE zone). The average increase of TGW value from both zones was about 5%. After double application, the increase of TGW was: about 5%, 10% and 9% for MAR zone, SE zone and both zones respectively. In individual trials TGW calculated for plots treated once with BAS 762 02 F was usually comparable (40 trials) or statistically higher (33 trials from SE zone and 1 trial from MAR zone), than TGW calculated for untreated plots. TGW calculated for the plots treated twice with BAS 762 02 F was comparable (10 trials) or statistically higher (12 trials: SE (11), MAR (1)), than TGW calculated for untreated plots. Comparing BAS 762 02 F with standard (BAS 9488 0 F), no statistically significant differences were noted in TGW value in most of the trials.
Oil content was assessed in 52 trials (MAR (9), SE (43)), where BAS 762 02 F was applied once at dose rate of 1 L/ha and in 21 trials (MAR (5), SE (16)), where the tested fungicide was applied twice. After single application, BAS 762 02 F gave increase of oil content from 0,8% (MAR zone) to over 4% (SE zone). The average increase of oil content from both zones was about 4%. After double application the increase of oil content was: about 4%, 5% and 4% for MAR zone, SE zone and both zones respectively. In individual trials oil content calculated for the plots treated once with BAS 762 02 F was usually comparable (33 trials) or statistically higher (19 trials: SE (18), MAR(1)), than oil content calculated for untreated plots. Oil content calculated for BAS 762 02 F applied twice was comparable (11 trials) or statistically higher (10 trials: SE (9), MAR (1)), than oil content calculated for untreated control. Comparing BAS 762 02 F with standard (BAS 9488 0 F), no statistically significant differences were noted for oil content in most of the trials.

WHEAT (TGW, HLW)
Quality yield parameters (TGW and HLW) have been assessed in 23 efficacy trials (12 trials from MAR zone, 11 trials from NE zone). The average TGW value for BAS 762 02 F at dose rate of 1 L/ha was higher by about 3%, in MAR zone, NE zone and in both zones altogether, compared with untreated plots. Statistically significant increase of TGW was noted in 4 (MAR (2), NE (2)) out of 23 trials after application of BAS 762 02 F at dose rate of 1 L/ha. In the remaining 19 trials no significant difference in TGW value were noted, comparing TGW calculated for BAS 762 02 F with untreated control. The average HLW value for BAS 762 02 F at dose rate of 1 L/ha was higher by about 0,5%, 1% and 1%, in MAR zone, NE zone and in both zones respectively, compared with untreated control. In individual trials HLW calculated for BAS 762 02 F at dose rate of 1 L/ha was usually comparable (22 trials) or statistically higher (1 trial from NE zone) compared with HLW calculated for untreated plots. Comparing BAS 762 02 F with reference products (BAS 9314 1 F, BAS 560 00F), no statistically significant differences were noted for TGW and HLW in most of the trials.

Green leaf area in HELAN; Tables: 3.2-52, 3.2-53.

Data on the effect of BAS 762 02 F on green leaf area (73 trials with single application from: MAR zone (11), SE zone (62) and 21 trials with double application from: MAR zone (4), SE zone (17)) has been submitted to evaluation. Increase of green leaf area has been noted in 69 out of 73 trials after application of BAS 762 02 F at recommended dose rate of 1 L/ha. The average increase value achieved 15,2% after single application and 17,7% after double application of BAS 762 02 F. Similar results have been noted for reference product (BAS 9488 0F).
It can been concluded that BAS 762 02 F has a beneficial effect on increased green leaf area in sunflower.

Summarizing data on yield and yield quality from efficacy trials, it can be concluded that the tested fungicide BAS 762 02 F applied at dose rate of 1 L/ha has no adverse effect on the yield and its quality parameters of three target crops: winter oilseed rape, sunflower and winter wheat.

3.3 Information on the occurrence or possible occurrence of the development of resistance (KCP 6.3)

The use of BAS 762 02 F (100 g mefentrifluconazole and 200 g boscalid per litre SC formulation) is intended for the control of *Sclerotinia sclerotiorum*, *Alternaria* spp., *Neopseudocercosporella brassicae* and *Erysiphe cruciferarum* in oilseed rape, control of *Sclerotinia sclerotiorum*, *Alternaria helianthi*, *Plenodomus lindquistii* (*Phoma macdonaldii*), and *Diaporthe helianthi* (*Phomopsis helianthi*) in sunflower and *Zymoseptoria tritici*, *Blumeria graminis* f.sp. *tritici*, *Oculimacula yallundae* and *Oculimacula acuformis* in wheat.

In accordance with the EPPO guideline PP 1/213(4), a Resistance Risk Analysis has been conducted. A summary of the study is provided in this chapter. The full report can be found under DocID 2020/2082886.

3.3.1 Mode of action

Mefentrifluconazole is a fungicide belonging to the group of the sterol biosynthesis inhibitors (SBI, mode of action class G). Within the SBIs, it belongs to the subgroup of demethylation inhibitors (DMI, G1, FRAC 2020) and the chemical group of triazoles.

The primary mode of action of DMIs is the blocking of ergosterol biosynthesis through inhibition of cytochrome P450 sterol 14α-demethylase (CYP51). The depletion of ergosterol and accumulation of non-functional 14α-methyl sterols results in inhibition of growth and cell membrane disruption.

Mefentrifluconazole is the first isopropanol azole: the triazole ‘head’ sits on the ‘neck’ of a slim isopropanol linker. This chemical constellation ensures a high degree of structural flexibility that is unique among the DMIs. This slim linker requires less energy to adjust compared to conventional DMIs. When mefentrifluconazole approaches the active site of its target enzyme, the flexible linker allows it to form a hook, which fits into the enzyme’s binding pocket, resulting in strong inhibition of enzyme activity. This might explain the high intrinsic activity of mefentrifluconazole on the target enzyme, which has been shown in studies with the cyp51 of *Zymoseptoria tritici* in comparison with other DMIs (Figure 2).

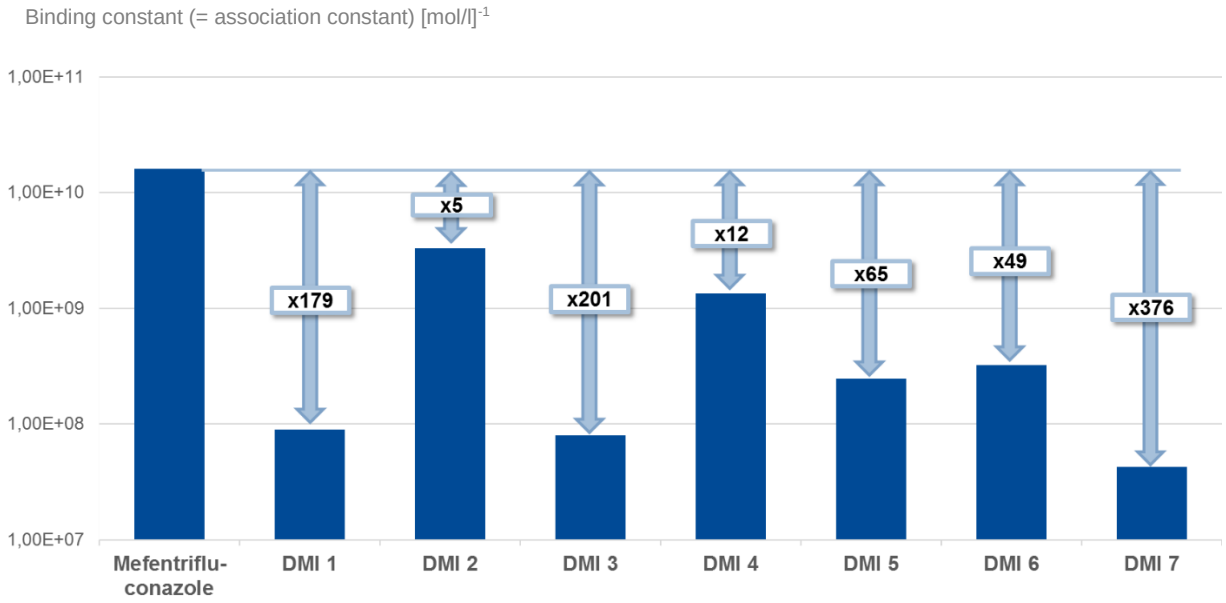

Figure 2 1: Binding constant (= association constant) of mefentrifluconazole and different DMIs [mol/l]-1 on the cytochrome P450 sterol 14α-demethylase (CYP51). The binding constant describes the affinity between a compound and its target. The higher the value, the stronger is the binding.

Boscalid is a member of the fungicide group succinate dehydrogenase inhibitors (SDHI, mode of action class C2) and the mode of action of boscalid at the molecular level is the inhibition of the enzyme succinate dehydrogenase (SDH), also known as complex II in the mitochondrial electron transport chain (Kulka and von Schmeling 1995). Like other complexes of the respiratory chain, this enzyme is a component of the inner mitochondrial membrane. It consists of four nucleus-encoded subunits (SDH A, B, C, D). Two of these polypeptides (SDH C, D) anchor the complex in the membrane whilst the others project into the mitochondrial matrix where they catalyse the oxidation of succinate to fumarate as part of the tricarboxylic acid (TCA) cycle. The electrons so released are channelled into the electron transport chain via the co-substrate ubiquinol. Complex II occupies a key function in fungal metabolism. Not only does it deliver high-energy electrons for energy production, it also forms an essential junction where components of the TCA cycle can be diverted to become the building blocks for amino acids and lipids. Through its inhibition of complex II, boscalid disrupts fungal growth by preventing energy production and by eliminating the availability of the chemical building blocks for the synthesis of other essential cellular components.

3.3.2 Mechanism of resistance

Mefentrifluconazole: Tree major mechanisms are associated with changes in DMI-sensitivity:

- Mutations in the target gene (cyp51), as described e.g. for *Zymoseptoria tritici* (Leroux *et al.* 2006, XXX *et al.* 2008, Huf *et al.* 2018), *Puccinia triticina* (XXX *et al.* 2009) and *Phakopsora pachyrhizi* (Schmitz *et al.* 2014).
- Overexpression of the target protein, as described e.g. for *Zymoseptoria tritici* (Cools *et al.* 2012, Huf *et al.* 2020), *Phakopsora pachyrhizi* (Schmitz *et al.* 2014), *Blumeriella jaapii* (Ma *et al.* 2006), *Puccinia triticina* (XXX *et al.* 2009) and *Venturia inaequalis* (Schnabel and Jones 2001).
- Reduced intracellular accumulation of DMIs by overexpression of efflux-pumps, as described e.g. for *Zymoseptoria tritici* (Leroux and Walker 2011, Huf *et al.* 2020) and *Botrytis cinerea* (Kretschmer *et al.* 2009, Grabke and XXX 2015).

Various mutations in the target gene have different effects on different DMIs (Fraaije *et al.* 2007, XXX *et al.* 2008, Huf *et al.* 2018, 2020). Target gene mutations might be combined and accumulate and can result in higher levels of resistance (Cools and Fraaije 2013, Huf *et al.* 2020). In addition, target site overexpression and/or enhanced efflux can also be found simultaneously in isolates (XXX and Semar 2011, Cools and Fraaije 2013, Strobel *et al.* 2014, Huf *et al.* 2020). The accumulation of different resistance mechanisms results in a quantitative (directional) type of resistance and changes in the sensitivity of a population are gradual.

Boscalid belongs to the succinate dehydrogenase inhibitors (SDHI). The target enzyme is succinate dehydrogenase (SDH), which is a functional part of the tricarboxylic cycle and of the mitochondrial electron transport chain (Matsson and Hederstedt 2001, Keon *et al.* 1991). SDH consists of four subunits (A-D). Information about the putative mechanism of resistance to the SDHI carboxin has been reported for some plant pathogenic fungi (Keon *et al.* 1991, Ben-Yephet *et al.* 1975, Gunatilleke *et al.* 1976, Skinner *et al.* 1998, XXX *et al.* 2007a,b, XXX 2008, FRAC 2020) and it has been found that some specific mutations, which lead to amino acid substitutions in conserved regions in the B- (Keon *et al.* 1991, Skinner *et al.* 1998, Li *et al.* 2006, XXX *et al.* 2007a, b, XXX 2008), C- (Ito *et al.* 2004, XXX 2008) or D-subunit (Matsson *et al.* 1998, Glättli *et al.* 2009), result in reduced sensitivity. Amino acid exchanges found in the SDH subunits of SDHI resistant mutants and their possible impact on SDH structure and SDHI binding are described and reviewed in more detail by XXX *et al.* (2015).

3.3.3 Evidence of resistance

Mefentrifluconazole: Some pathogens have shown a shift towards lower sensitivity in the period since DMI introduction. For most plant pathogenic fungi, the situation has stabilized after a period of adaptation (FRAC 2020).

European DMI sensitivity monitoring has been intensified for *Zymoseptoria tritici* since 2003, the year of the spreading of QoI resistance in this pathogen in Europe. A shift to a reduced sensitivity towards different DMIs has been determined with isolates taken from the most important cereal-growing regions in Europe (FRAC 2020, Strobel *et al*. 2014). Similar reports on stable sensitivity situations exist for *Puccinia triticina* (FRAC 2020, XXX *et al*. 2009) and other *Puccinia* species (FRAC 2020), *Rhynchosporium secalis* (FRAC 2020), *Pyrenophora teres* (FRAC 2020), *Blumeria graminis* f.sp. *tritici* and *Blumeria graminis* f.sp. *hordei* (FRAC 2020).

Mutations and combinations of mutations in the target gene and to a lesser extent also enhanced efflux and target protein overexpression can be linked to the sensitivity changes observed (Cools and Fraaije 2013, Huf *et al.* 2020).

Isolates belonging to different cyp51-haplotypes showed variation in their sensitivity response to different DMIs, that means, correlation of sensitivity between various DMIs can be low or even negative (XXX and Semar 2011). This is confirmed by frequency analyses of cyp51-haplotypes in the field after various DMI applications, which showed that DMIs select cyp51-haplotypes differently (Fraaije *et al.* 2007, XXX *et al.* 2008). This is especially the case for mefentrifluconazole, which is highly active on many strains of *Zymoseptoria tritici*, which show lower sensitivity to other DMIs.

Hypothesis why mefentrifluconazole provides high efficacy of DMI shifted strains

Mutations in the cyp51 gene cause alterations of the binding site, often the binding site is widened, which affects the binding of conventional DMIs. The mefentrifluconazole molecule is more flexible in its structure than other DMIs and might therefore be able to bind even if the binding pocket shape is altered (Strobel *et al.* 2020) This flexibility comes from the fact that the triazole 'head' sits on the 'neck' of a slim isopropanol linker. This chemical constellation ensures a high degree of structural flexibility that is unique among the DMIs (Figure 3). This slim linker requires less energy to adjust compared to conventional DMIs. When mefentrifluconazole approaches the active site of the target enzyme C14-demethylase (cyp51), the flexible linker allows it to easily form a "hook", which fits perfectly into the enzyme's binding pocket, resulting in strong inhibition of enzyme activity. It easily adapts to different shapes and sizes of binding pockets caused by various target site mutations (Figure 4).

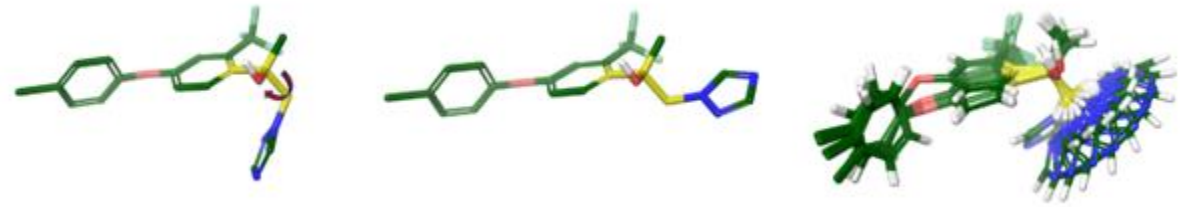

Figure 32: Flexibility of the mefentrifluconazole molecule

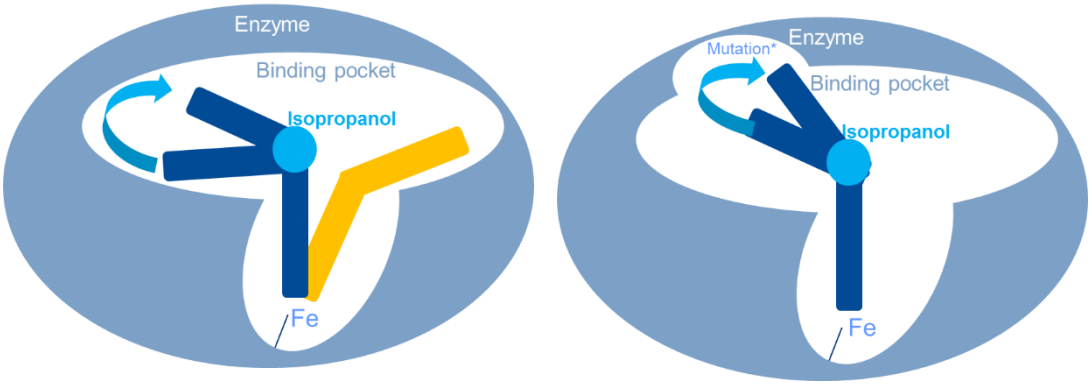

Figure 43: Adaption of mefentrifluconazole in a wildtype (left) and a mutated binding pocket (right), schematic.

(Blue: mefentrifluconazole, yellow: other DMI. The heme iron (Fe) of the cytochrome P450 is the major binding partner for the triazole ring of DMI fungicides)

Some pathogens have shown a shift towards lower sensitivity in the period since DMI introduction. For most plant pathogenic fungi, the situation has stabilized after a period of adaptation (FRAC 2020).

Boscalid: Several mutations in the target protein at different positions in three SDH subunits B, C and D were detected in field isolates of plant pathogens such as *Alternaria alternata, Botrytis cinerea, Corynespora cassiicola, Didymella bryoniae, Pyrenophora teres, Ramularia collo-cygni, Sclerotinia sclerotiorum* and in *Zymoseptoria tritici* (Skinner *et al*. 1998, Avenot and Michaelidis 2007, XXX 2008, XXX *et al*. 2007a, b, 2010, Ishii 2007, Glättli *et al.* 2009, Veloukas *et al.* 2011, Scalliet *et al.* 2012, Semar *et al.* 2014, Rehfus *et al.* 2016, 2018, 2019). Even within a single species, different mutations were found at one location (*e.g.* B-P225L,F,T or B-H272Y,R,L in *Botrytis cinerea*), and in different locations in different subunits (*e.g.* B-H277Y, C-H134R, D-H133R in *Alternaria alternata*). Some mutations are part of the binding site with explainable effects on SDHI binding (e.g. in case of B-H272-exchanges in *B. cinerea*) or outside of the binding area which excludes a direct influence on SDHI binding. The impact of the mutation on the resistance level is not correlated with its proximity to the binding site (Glättli *et al.* 2009) and exchanges at one position can cause different resistance factors (e.g. H272Y,R,L in *B. cinerea*). In most cases mutated SDH has a lower activity, which might confer fitness penalties of SDHI resistant isolates (Scalliet *et al.* 2012).

In the last years extensive monitoring programs were performed and results were shown in the annual FRAC meetings of the SDHI Working Group (FRAC 2020). Out of the target species of this RRA, isolates with reduced SDHI sensitivity and mutations in the SDH genes have been found for *Zymoseptoria tritici* and *Sclerotinia sclerotiorum*.

Cross-resistance

Mefentrifluconazole: There are a lot of studies available on the sensitivity of plant pathogens towards DMIs, in particular studies with *Zymoseptoria tritici*. These studies indicated that a clear statement is not possible. There are DMIs which show a good correlation for the sensitivity in *Zymoseptoria tritici*, but correlations for others are low, especially when sensitivities of imidazoles and triazoles are correlated. Obviously, there are mechanisms which might affect all DMIs to a higher or lower level, such as target protein (cyp51) overexpression, enhanced efflux or some target site mutations. It has been shown for *Zymoseptoria tritici* in various studies that some target site mutations were more selective to one than to another DMI. The different effects mainly of target site mutations on different DMIs lead often to a low correlation of the sensitivity.

For mefentrifluconazole, the low correlation of sensitivity between DMIs is even more pronounced. This is described in a study performed with *Zymoseptoria tritici*, where sensitivity correlations of mefentrifluconazole and epoxiconazole and desthio-prothioconazole, respectively, are shown. Desthio-prothioconazole was used instead of prothioconazole due to its recognised role in disease control (Parker *et al.* 2013). The low correlation coefficients (R^2) indicate a low correlation with the sensitivity to other DMIs (Figure 5). Figure 6 shows that the current adaptation of *Z. tritici*, determined as EC_{50}, is in a smaller range for mefentrifluconazole than for other DMIs.

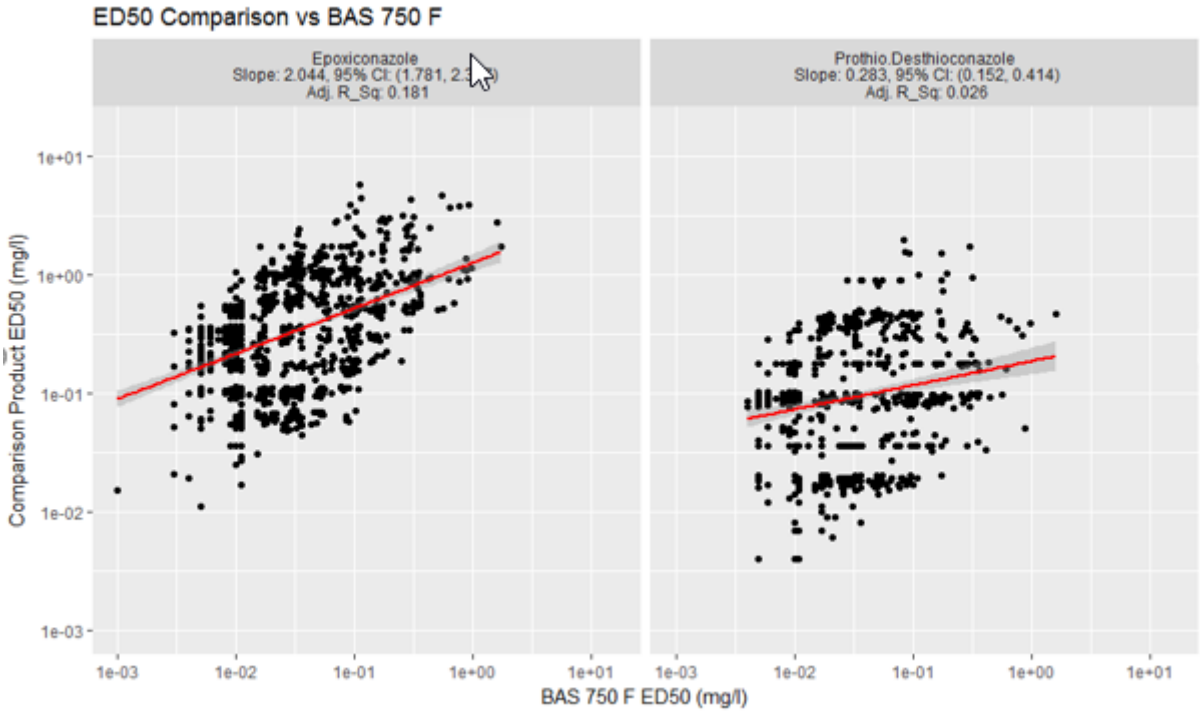

Figure 4: Correlation of the mefentrifluconazole (=BAS 750 F) sensitivity of *Zymoseptoria tritici* to epoxiconazole and desthio-prothioconazole, determined by microtiter assays (BASF, unpublished studies). R^2 (Adj. R_Sq) are 0.181 and 0.026 for epoxiconazole and desthio-prothioconazole, respectively

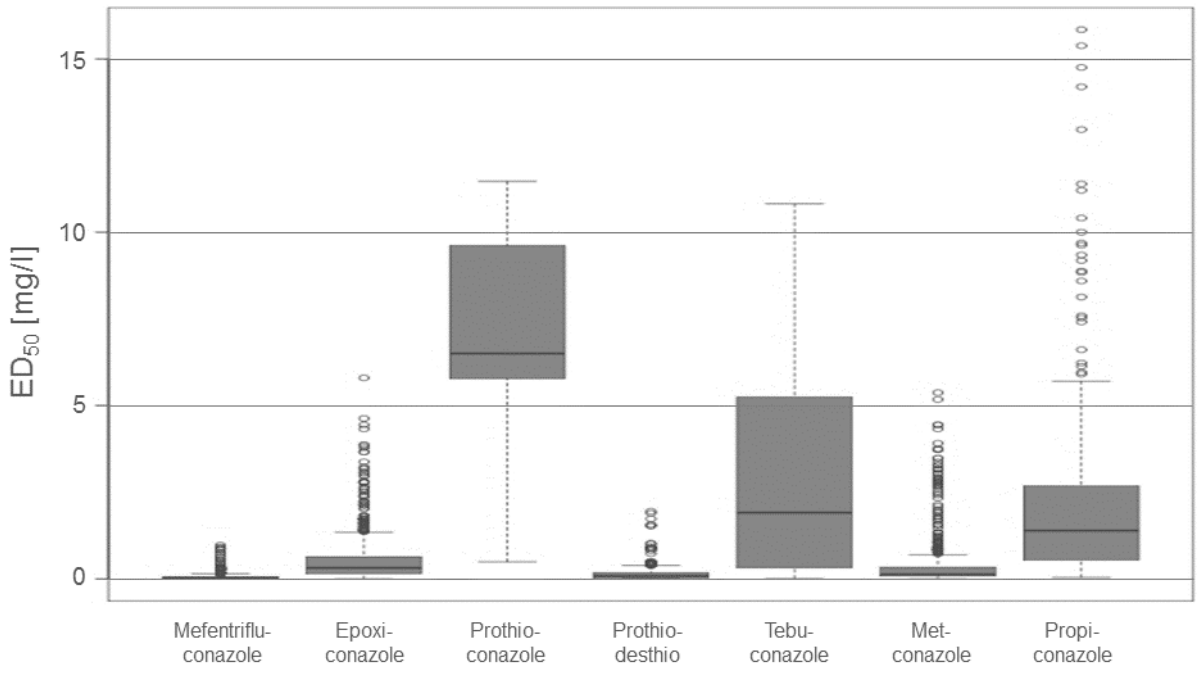

Figure 5: Range of sensitivity (ED50) determined in isolates from European populations 2014-2016 of various DMIs (1272 isolates, BASF, unpublished studies). Lowest range was found for mefentrifluconazole

However, the current recommendation of the FRAC SBI Working Group is to consider all DMIs as one product group in which in general cross-resistance exists.

Within the SBI-group, there is no cross-resistance between morpholines (e.g. fenpropimorph) and DMI fungicides. There is no cross-resistance nor a correlation of the sensitivity to SBI fungicides and other modes of action.

Boscalid: BASF internal studies showed that there is cross resistance between SDHI fungicides in different tested fungal species, which is also confirmed by modelling studies with different SDHIs (Glättli *et al.* 2009). The FRAC SDHI Working Group states on the webpage: : "*The SDHI fungicides (benodanil, benzovindiflupyr, bixafen, boscalid, carboxin, fenfuram, fluindapyr, fluopyram, flutolanil, fluxapyroxad, furametpyr, inpyrfluxam, isofetamid, isoflucypram, isopyrazam, mepronil, oxycarboxin, penflufen, penthiopyrad, pydiflumetofen, sedaxane, thifluzamide) are in the same cross-resistance group"* (FRAC 2020).

There is no cross resistance of SDHIs with fungicides with other modes of action.

Baseline sensitivity / Monitoring data

In the following chapter, BASF baseline sensitivity data and the most recent BASF monitoring data are provided, followed by the latest statements of FRAC available on the FRAC website. Sensitivities to DMIs and mefentrifluconazole are described in subchapter A followed by sensitivities to SDHIs and boscalid in subchapter B.

In general, sensitivity can be assessed by *in vivo* tests or *in vitro* tests or - if the genetic background (mutation) is known for the relevant resistance mechanism - by molecular genetic methods such as pyrosequencing or real-time PCR. All methods are established in the Fungicide Resistance Research Laboratory of BASF.

A. DMI sensitivity data (mefentrifluconazole)

Baseline studies

More than 40 years ago the first DMI fungicides have been launched for control of various pathogens in a high number of crops. Many field populations of plant pathogens adapted to DMIs and therefore they do not reflect the "wild type" or "baseline" sensitivity, which a population had before DMI market launch.

Therefore, sensitivity studies nowadays cannot be seen as baselines, but show the actual sensitivity situation. Together with the sensitivity of old wild type isolates from internal or external fungal culture collections, the adaptation of isolates from current field populations compared to the baseline sensitivity can be estimated.

However, it is of most importance if the current field population is still sufficiently controlled with registered field rates. Annual sensitivity monitoring shows changes in populations over time, which might then lead to further studies on the field efficacy.

A1. Sclerotinia sclerotiorum on oilseed rape and sunflower

Monitoring data

A broad European monitoring for mefentrifluconazole and *Sclerotinia sclerotiorum* was done in season 2019. 339 isolates from oilseed rape and 60 isolates from sunflower from different regions were made and investigated for their sensitivity to mefentrifluconazole. Figure 7 and Figure 8 show the sensitivity distribution over the years and the origin.

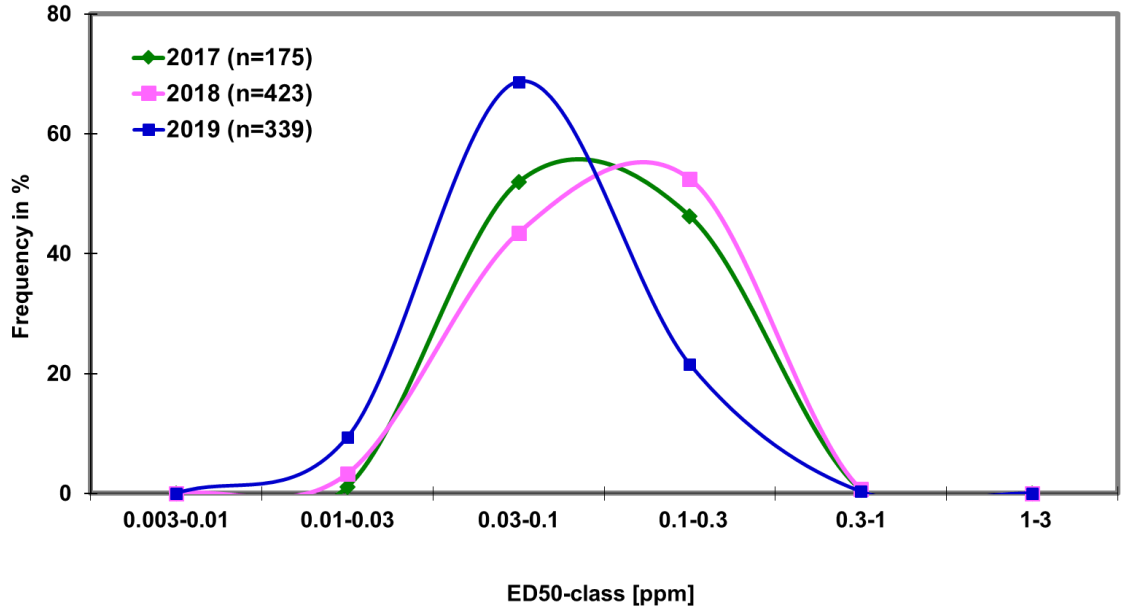

Figure 7 6: Frequency distribution of EC50 values for mefentrifluconazole of isolates made from oilseed rape

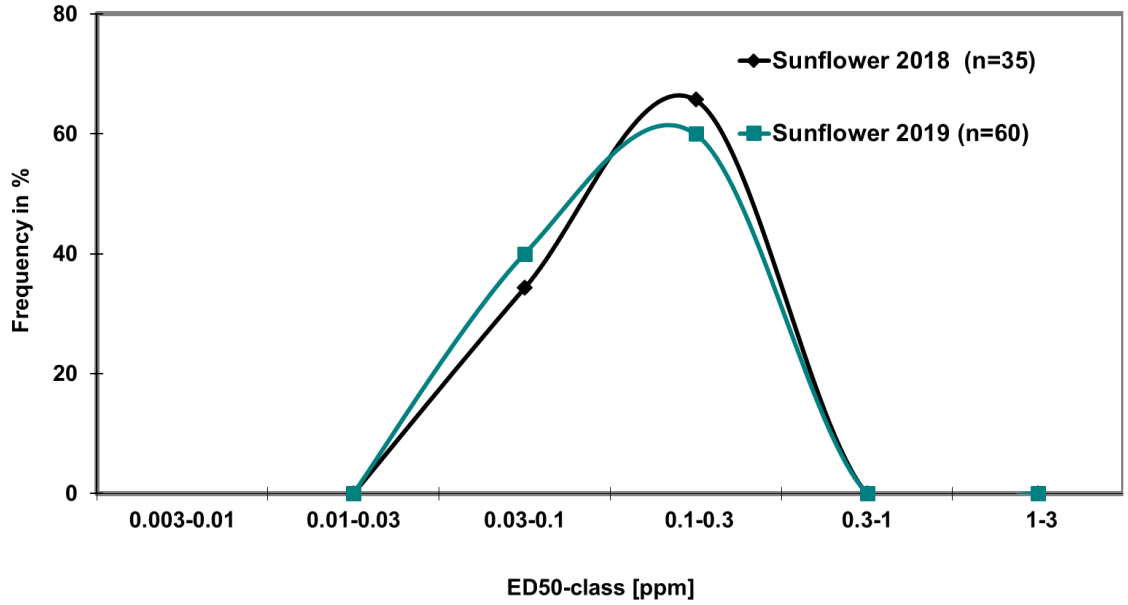

Figure 8 7: Frequency distribution of EC50 values for mefentrifluconazole of isolates made from sunflower

FRAC statement

FRAC summary of the status of DMI resistance in *Sclerotinia sclerotiorum* based on all available data from the different members of the FRAC DMI Working Group (status webpage July 2nd, 2020):

2.2.2. Sclerotinia stem rot, white mould (*Sclerotinia sclerotiorum*)

Presentation of monitoring data for 2016: BASF, Bayer, Syngenta; for 2017: Bayer, BASF, Syngenta; for 2018: BASF, Bayer, Syngenta, for 2019: Bayer, Syngenta

- Monitoring was carried out in 2016 in Czech Republic, France, Germany, Lithuania, Poland, Slovakia, and United Kingdom. Disease pressure was low to moderate.
- Monitoring was carried out in 2017 in Czech Republic, Denmark, France, Germany, Latvia, Lithuania, Poland, Sweden, and United Kingdom. Disease pressure was low to moderate.
- Monitoring was carried out in 2018 in Bulgaria, Czech Republic, France, Germany, Hungary, Poland, Romania, Slovakia, and United Kingdom. Disease pressure was low to moderate.
- Monitoring was carried out in 2019 in Czech Republic, France, Germany, Hungary, Poland, Romania, Slovakia and Ukraine. Disease pressure was moderate.
- Monitoring data from the four years showed a stable and narrow sensitivity range with no geographical differences.
- For recommendations see General Recommendations.

A.2. Alternaria spp. on oilseed rape

There are currently no internal DMI sensitivity data and no data from FRAC available for *Alternaria* species on oilseed rape. A literature research back to 2000 in the data base of Scopus (Elsevier) from was done in May 2020 and did not result in any reports on DMI resistance development of *Alternaria* spp. in oilseed rape or in reports of lower DMI performance on *Alternaria* spp. diseases in this crop.

A.3. Erysiphe cruciferarum on oilseed rape

There are currently no internal DMI sensitivity data and no data from FRAC available for *Erysiphe cruciferarum* on oilseed rape. A literature research back to 2000 in the data base of Scopus (Elsevier) from was done in May 2020 and did not result in any reports on DMI resistance development of *Erysiphe cruciferarum* in oilseed rape or in reports of lower DMI performance on *Erysiphe cruciferarum* in this crop.

A.4. Diaporthe helianthi on sunflower

There are currently no internal DMI sensitivity data and no data from FRAC available for *Diaporthe helianthi* in sunflowers. A literature research back to 2000 in the data base of Scopus (Elsevier) from was done in May 2020 and did not result in any reports on DMI resistance development of this species in sunflower or in reports of lower DMI performance on *Diaporthe helianthi* in this crop.

A.5. Alternaria helianthi on sunflower

Studies on the sensitivity of *Alternaria helianthi* towards mefentrifluconazole are currently running. There are so far no data from FRAC available for *Alternaria helianthi* in sunflowers. A literature research back to 2000 in the data base of Scopus (Elsevier) from was done in May 2020 and did not result in any reports on DMI resistance development of this species in sunflower or in reports of lower DMI performance on *Alternaria helianthi* in this crop.

No FRAC data are available.

A.6. Plenodomus lindquistii on sunflower

There are currently no internal DMI sensitivity data and no data from FRAC available for *Plenodomus lindquistii* in sunflowers. A literature research back to 2000 in the data base of Scopus (Elsevier) from was done in May 2020 and did not result in any reports on DMI resistance development of this species in sunflower or in reports of lower DMI performance on *Plenodomus lindquistii* in this crop.

A.7. Zymoseptoria tritici on wheat

Monitoring data

Broad European field monitoring for mefentrifluconazole started in 2014. Data from 2014 to 2019 were from the most intensive growing wheat regions in Europe, which are known for highest DMI adaptation worldwide. Box and whisker plots of EC_{50} values are provided in Figure 5. The variability of sensitivity is caused by mechanisms known to be responsible for DMI shifting. However, even isolates with the lowest sensitivity are still controlled by mefentrifluconazole as shown in the previous chapter (Figure 7). The data from 2014 to 2019 show a quite stable sensitivity situation.

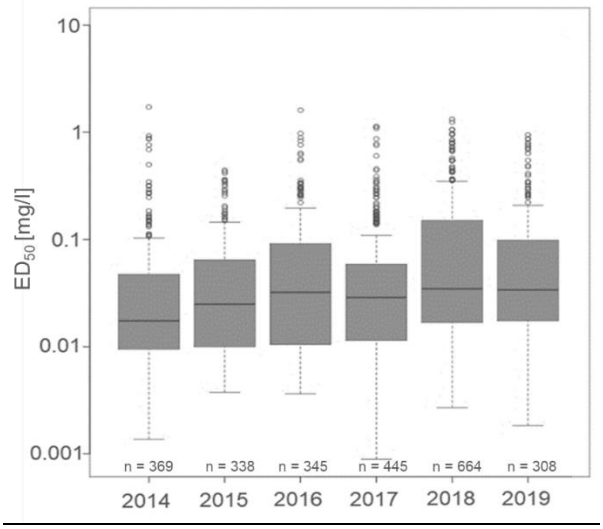

Figure 98: Sensitivity of European populations of Zymoseptoria tritici from 2014 to 2019 towards mefentrifluconazole. Method was a microtiter test, EC50 [mg/l] was determined by Probit analysis.

FRAC statement

FRAC summary of the status of DMI resistance in *Zymoseptoria tritici* based on all available data from the different members of the FRAC DMI Working Group (status webpage July 2nd, 2020):

1.1. WHEAT

1.1.1. Septoria Leaf Blotch (*Mycosphaerella graminicola* / *Zymoseptoria tritici*)

Presentation of monitoring data 2019: ADAMA, BASF, Bayer, Corteva, Syngenta

- Disease pressure was moderate in most of the European countries but regionally variable in 2019.
- DMIs field performance was good when used according to the manufacturers and FRAC recommendations. No general field resistance has been reported.
- Monitoring 2019 was carried out in Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Netherlands, Poland, Romania, Russia, Slovenia, Spain, Sweden, Switzerland, Ukraine, and United Kingdom
- After the slight increase in the frequency of less sensitive isolates from 2002 to 2004, the situation had stabilised between 2005 and 2008. In 2009 a trend to slightly higher EC50 values was observed in important cereal growing areas (France, Germany, Ireland, United Kingdom), this trend has slowed down in 2010 to 2012 and was stable in 2013. 2014 sensitivity was in the same range as 2011.
- In 2015 depending on the individual active ingredient and regions slight shifts of sensitivity of populations have been observed. Highest EC50 values were observed in areas of elevated disease pressure and sub-optimal use of azoles in spray programs (e.g. reduction of rates in comparison to the manufacturer's recommended rate and inappropriate use of effective mix-partners).
- In 2016 and also in 2017 the sensitivity of the populations was overall stable on a European level with regional differences also based on different disease epidemics. In regions with lower sensitivity in 2015 the sensitivity of the populations was stable and, in some areas, even partially increased.
- In 2018 the sensitivity of the populations was overall stable on the European level.
- In 2019, the sensitivity of the populations was overall stable on European level with EC_{50} sensitivity values slightly higher compared to 2018 in some geographies but overall in the range of previous years.
- In *Z. tritici*, different DMI haplotypes can lead to varying levels of sensitivity depending on the chemical structure. As DMIs are generally cross-resistant, resistance management approaches should be the same for all DMIs.

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- Overall, DMI EC_{50} sensitivity values were somewhat higher in the UK and Ireland than observed on the European continent where a gradient can be observed from North-West to South-East.
- In regions with limited options in fungicides classes and/or a common practice of significantly reduced rates DMIs are at higher risk and performance might be impacted.

A.8. *Oculimacula* spp. on wheat

Monitoring data

No BASF data are so far available for mefentrifluconazole and *Oculimacula* spp.

FRAC statement

FRAC summary of the status of DMI resistance in *Oculimacula* spp. based on all available data from the different members of the FRAC DMI Working Group (status webpage July 2nd, 2020):

1.1.4. Eyespot (*Tapesia* spp, *syn. Oculimacula* spp.)

Presentation of monitoring data 2019: Syngenta.

- Field performance was good.
- An analysis of samples from Czech Republic, Denmark, France, Germany, Poland, and United Kingdom from 2019 was presented.
- Between 2003 and 2012 there was no change in the sensitivity of W and R types, stable situation had been observed during that time. In 2013, some sensitivity change has been observed in the United Kingdom, but not in France or Germany. In 2014 further sensitivity decrease has been observed in the United Kingdom, and for the first time also in France and Germany. However, overall, resistance factors still remain low and performance was not affected.
- The 2018 data showed a homogenous and sensitive situation in all countries.
- In 2019, still comparable sensitivity ranges and medians were observed in all monitored countries without any geographical variations.

A.9. *Blumeria graminis* f.sp. *tritici* on wheat

Monitoring data

No BASF data are so far available for mefentrifluconazole and *Blumeria graminis* f.sp. *tritici.*

FRAC statement

FRAC summary of the status of DMI resistance in *Blumeria graminis* f.sp. *tritici* based on all available data from the different members of the FRAC DMI Working Group (status webpage July 2nd, 2020):

1.1.2. Powdery mildew (*Blumeria graminis* f.sp. *tritici* / *Erysiphe graminis* f.sp. *tritici*)

Disease pressure in 2019 was low across Europe.

DMIs

Presentation of monitoring data 2019: Bayer, Sumitomo

- DMI field performance was good.
- In 2019, monitoring was carried out in Czech Republic, France, Germany, Poland, and United Kingdom.
- Sensitivity data presented for 2016 to 2019 confirmed that the situation was overall stable within the range of variability detected during the last 20 years.
- Differences in the sensitivity are significantly a.i. and regionally dependent. Higher resistance factors were observed only for particular DMIs especially in France, Germany and UK, but also to a lesser extend in Belgium.

B. SDHI sensitivity data

B.1. Sclerotinia sclerotiorum on oilseed rape and sunflower

Monitoring data

A broad European monitoring for boscalid and *Sclerotinia sclerotiorum* is running on a yearly basis. In 2019 340 isolates from 70 oilseed rape samples and 60 isolates from 12 sunflower samples from different regions were made and investigated for their sensitivity to boscalid by the co-operator Epilogic according to the method described by XXX *et al.* (2007c). Figure 10 shows the frequency of resistant isolates in the different samples, separated by crops (oilseed rape and sunflowers).

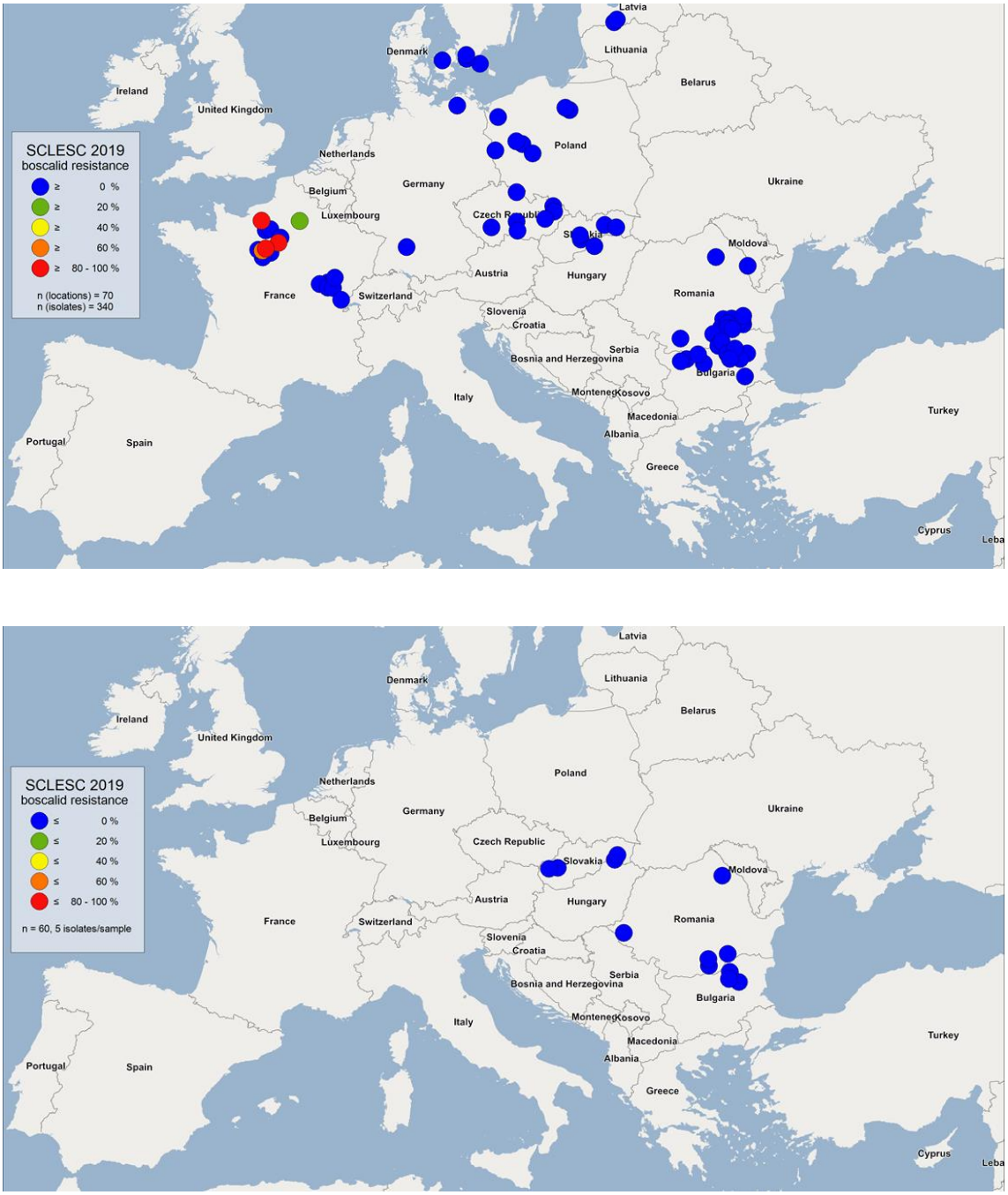

Figure 10 9: Frequency of SDHI resistance in 70 samples from oilseed rape (up) and 12 from sunflowers (down). Resistance has only been detected in some samples from France in oilseed.

FRAC statement

FRAC summary of the status of SDHI resistance in *Sclerotinia sclerotiorum* based on all available data

from the different members of the FRAC SDHI Working Group (status July 2nd, 2020):

Oilseed rape – White mold (*Sclerotinia sclerotiorum*)
(BASF, Bayer, Syngenta, Isagro/ FMC)

Disease pressure in 2019 was low.
In the season 2019, samples were tested from Czech Republic, France, Germany, Hungary, Romania, Slovakia, Poland, Ukraine and the United Kingdom. All samples showed full sensitivity.
Monitoring is ongoing.

Historical background:
Extensive monitoring programs were carried out since **2006**.
In **2014** and **2015**, single resistant isolates were detected in France. No resistant isolates were detected in 2014 in Czech Republic, Germany, the United Kingdom and Poland.
In 2015, no resistance was detected in the Netherlands, Belgium, France, Poland, Czech Republic, Croatia and Germany.
In the season **2016**, samples were tested from Germany, France, the United Kingdom, Czech Republic, Lithuania, Denmark and Poland. No to low frequency of resistance was detected in France and Germany.
Disease pressure in **2017** was low to moderate. In the season 2017, samples were tested from Germany, France, the United Kingdom, Czech Republic, Latvia, Sweden, Romania, Denmark and Poland. Full sensitivity was observed in Czech Republic, Romania and Poland. Low frequency of resistance was detected in Germany, France, the United Kingdom, Latvia, Sweden and Denmark.
In the season **2018**, samples were tested from France, Germany, Hungary, Romania, Poland and the United Kingdom.

A low frequency of adapted isolates was detected in France. The following mutations were associated to decreased sensitivity in past monitoring programs: B-H273Y, C-H146R, C-G91R, D-H132R, C-G150R, D-T108K.

B.2. Alternaria spp. on oilseed rape

There are currently no internal SDHI sensitivity data and no data from FRAC available for *Alternaria* species on oilseed rape. A literature research back to 2000 in the data base of Scopus from was done in May 2020 and did not result in any reports on SDHI resistance development of *Alternaria* spp. in oilseed rape or in reports of lower SDHI performance on *Alternaria* spp. diseases in this crop.

B.3. Erysiphe cruciferarum on oilseed rape

There are currently no internal SDHI sensitivity data and no data from FRAC available for *Erysiphe cruciferarum* on oilseed rape. A literature research back to 2000 in the data base of Scopus from was done in May 2020 and did not result in any reports on SDHI resistance development of *Erysiphe cruciferarum* in oilseed rape or in reports of lower DMI performance on *Erysiphe cruciferarum* in this crop.

B.4. Diaporthe helianthi on sunflower

There are currently no internal SDHI sensitivity data and no data from FRAC available for *Diaporthe helianthi* in sunflowers. A literature research back to 2000 in the data base of Scopus (Elsevier) from was done in May 2020 and did not result in any reports on SDHI resistance development of this species in sunflower or in reports of lower SDHI performance on *Diaporthe helianthi* in this crop.

B.5. Alternaria helianthi on sunflower

Four isolates from a diseased sunflower trial in Hungary have been sampled and analyzed for boscalid sensitivity. The method used was a microtiter test with YBG medium and the resulting EC_{50} values 19 days after test start were in the range of 0.52-1.99 ppm. These values can be seen as EC_{50} values of boscalid-sensitive strains and the isolates will serve in future monitoring studies as reference isolates.
No FRAC data are available.

B.6. Plenodomus lindquistii on sunflower

There are currently no internal SDHI sensitivity data and no data from FRAC available for *Plenodomus lindquistii* in sunflowers. A literature research back to 2000 in the data base of Scopus (Elsevier) from was

done in May 2020 and did not result in any reports on DMI resistance development of this species in sunflower or in reports of lower SDHI performance on *Plenodomus lindquistii* in this crop.

B.7. Zymoseptoria tritici on wheat

In the BASF random monitoring studies from last years, strains with lower SDHI sensitivity were found. The tests were done with the SDHI fluxapyroxad and all isolates with EC_{50} values > 0.3 ppm are classified as isolates with acquired SDHI resistance. The frequency of SDHI resistance has increased in the previous years but the trend was less from 2018 to 2019 (Figure 9). Most of these strains contained mutations which cause low to moderate levels of adaptation (B-N225I, C-V166M, B-T268I/A, C-N86S/A, C-T79N/I, C-W80S). The mutation causing higher resistance levels, the C-H152R or various double mutants were less frequent, indicating that these bear a fitness penalty.

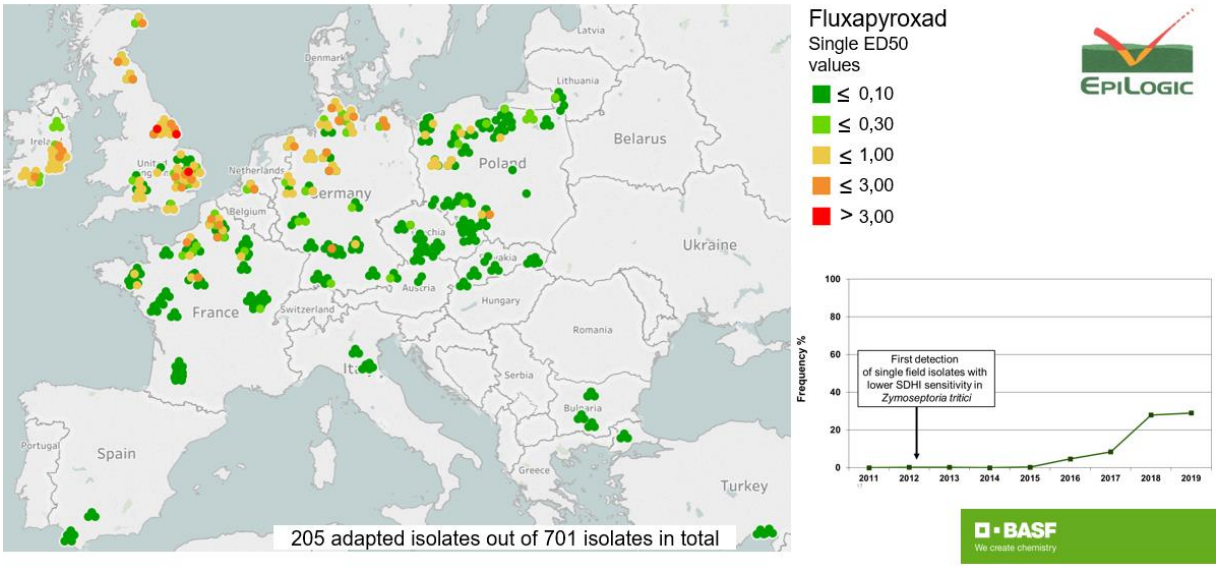

Figure ~~11~~ 10: Findings of SDHI adapted isolates of Zymoseptoria tritici in Europe from in 2019 (right) and fre-quency of SDHI resistance (left chart). Colour of dot shows the adaptation of a single isolate according to the legend. Sensitivity monitoring was done by the external company EpiLogic and mutation analysis in BASF.

FRAC statement

FRAC summary of the status of SDHI resistance in *Zymoseptoria tritici* based on all available data from the different members of the FRAC SDHI Working Group (status July 2nd, 2020):

Wheat – Septoria leaf blotch (*Mycosphaerella graminicola*)
(Bayer, Syngenta, BASF, Isagro/ FMC, Sumitomo, Adama)

Disease pressure in 2019 was moderate but regionally variable. Field performance of SDHI-fungicides against Septoria was good.
In 2019, the majority of isolates was sensitive and the overall situation stable compared to 2018, as was the frequency for the isolates showing low resistance factors. C-T79N and C-N86S were the most frequent mutations in this group in the last years.
All isolates from Austria, Bulgaria, Croatia, Czech Republic, Greece, Hungary, Italy, Latvia, Lithuania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Romania, Russia and Ukraine were sensitive.
A mostly sensitive situation was monitored in France with a low frequency of isolates with low resistance factors at few sites.
As in previous years, isolates bearing the mutation C-H152R continued to be detected at overall low frequencies in 2019 in Germany, Ireland, the Netherlands and the United Kingdom.
Single strains carrying double mutations associated with C-N86S and C-T79N were reported for the first time. The impact on sensitivity ranges from low to high depending on the combination. The fitness of these isolates and impact on product performance is still under investigation.

B.8. Oculimacula spp. on wheat

No current random monitoring data are available for *Oculimacula* spp. and boscalid and there is no information provided by FRAC for *Oculimacula* spp. and SDHI sensitivity.

A baseline for boscalid was made in BASF before market introduction of boscalid in cereals in 2004 and 2005 (Figure 10). Future monitoring data can be compared with these values and EC_{50} values higher than 1.0 ppm could identify isolates with acquired SDHI resistance.

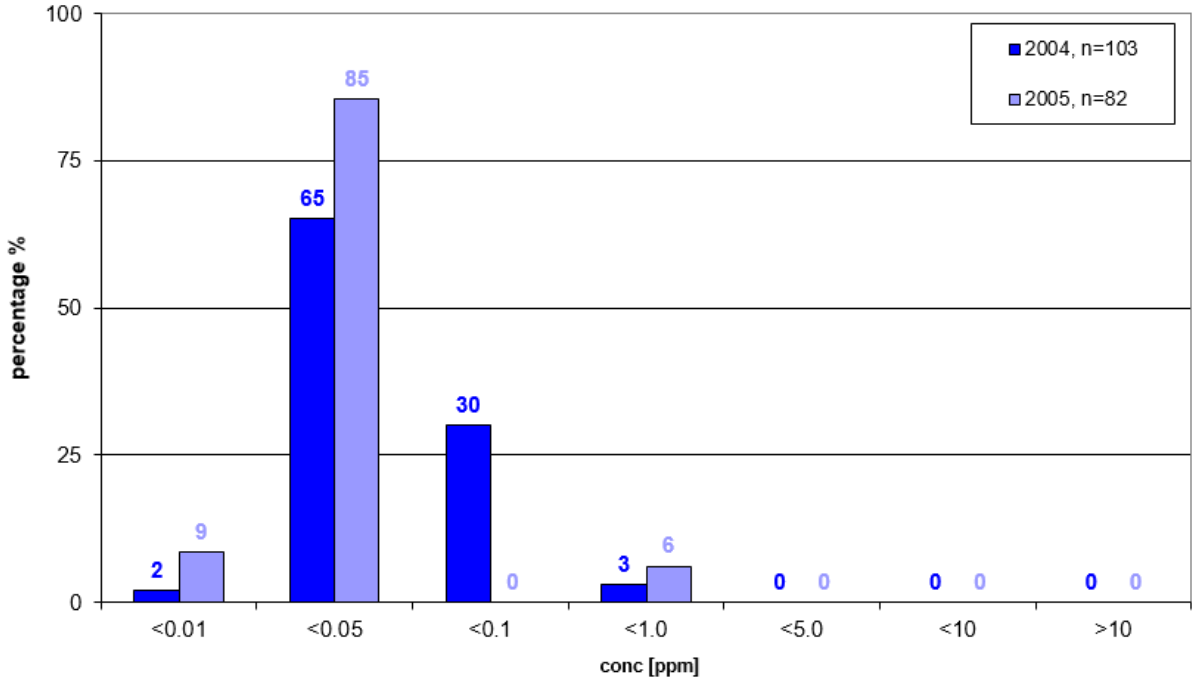

Figure ~~12~~ 11: Frequency distribution of EC50 values of European isolates of *Oculimacula* spp. From 2004 and 2005, determined by microtiter tests.

A literature research in the literature data base of Scopus (Elsevier) was done in January 2019. No report has been found which describes specific SDHI resistance in *Oculimacula* spp. Leroux *et al.* (2013) mentioned in their paper on fungicide resistance in *Oculimacula* spp. that enhanced efflux reduces fungicide sensitivity also to SDHIs, but at low levels with resistance factors of 10 and 13 for mycelial growth and germ tube elongation, respectively.

No FRAC data are available.

B.9. Blumeria graminis f.sp. tritici on wheat

No monitoring data are available for *Blumeria graminis* f.sp. *tritici* and boscalid are available. However a regular European monitoring is performed by BASF for the SDHI fluxapyroxad. Such monitoring studies did not indicate SDHI resistance in wheat powdery mildew so far.

FRAC statement

FRAC summary of the status of SDHI resistance in *Blumeria graminis* f.sp. *tritici* based on all available data from the different members of the FRAC SDHI Working Group (status July 2nd, 2020):

Wheat – Powdery mildew (*Blumeria graminis*)
(BASF, Sumitomo)

In 2019, full sensitivity was found in Czech Republic, Poland and the United Kingdom.

Historical background:
Monitoring programs carried out in **2017** confirmed the results from previous years and showed full sensitivity of isolates originating from the United Kingdom, France, Belgium, Germany and Denmark, Czech Republic.
In **2018**, full sensitivity was found in Belgium, Denmark, France, Germany and the United Kingdom.

Resistance risk assessment of unrestricted use pattern

Use pattern

BAS 762 02 F is intended for treatment with 1 l product per ha in oilseed rape, sunflower and wheat. The maximum number of applications in oilseed rape (between GS 57-75) and wheat (between GS 30-49) is 1, in sunflower (between GS 31-69) are 2 applications per season.

- ***Fungicide risk***

Classification of the fungicides was made according FRAC.

Mefentrifluconazole: FRAC describes the DMI fungicides in general as *medium-risk* compounds (FRAC 2020) according to the principles described in FRAC Monographs 1 and 2 (Brent 2007, Brent and Hollomon 2007).

Boscalid: FRAC describes the SDHI fungicides in general as *medium to high-risk* compounds (FRAC 2020) according to the principles described in FRAC Monographs 1 and 2 (Brent 2007, Brent and Hollomon 2007).

- ***Pathogen risk***

Classification of the fungicides was made according FRAC.

FRAC classified recently a high number of pathogens in species with a low, medium and high risk for fungicide resistance. This classification is based on experience and reported resistance claims over the last 45 years. Generally, the risk increases when a pathogen undergoes many and short disease cycles per season, the dispersal through spores over time and space is high and the competitive ability of resistant individuals is high in the absence of selection pressure. Furthermore, the risk is considered as high when resistance evolved already after few years of product use.

High risk pathogens:	*Blumeria graminis* f.sp. *tritici*
Medium risk pathogens:	*Alternaria* spp. on oilseed rape, *Erysiphe cruciferarum,* *Zymoseptoria tritici,* *Oculimacula* spp.
Low risk pathogens:	*Sclerotinia sclerotiorum,* *Alternaria helianthi,* *Plenodomus lindquistii,* *Diaporthe helianthi*

- ***Combined pathogen-fungicide risk***

Two different approaches can be found in the literature, the first one is a diagram by Brent and Hollomon (2007) and the other a diagram published in the EPPO document “Efficacy evaluation of plant protection products, Resistance risk analysis, PP 1/213(4), (EPPO 2015)”. The analyses were made with both

approaches to evaluate if there are significant differences. The results, however, show that the assessments of the combined pathogen x fungicide risks are very similar.

The combined risks of pathogens and fungicides are visualized in Figure 13 and Figure 14.

benzimidazoles dicarboximides phenylamides QoI **SDHIs**	high (x 3)	3	6	9
metrafenone **DMIs** MBIs phenylpyrroles anilinopyrimidines morpholines CAA	medium (x 2)	2	4	6
chlorothalonil dithianon copper dithiocarbamates phthalimides sulphur SAR-inducers	low (x 0.5)	0.5	1	1.5
basic fungicide risk / basic disease risk		low (1)	medium (2)	high (3)
		Sclerotinia sclerotiorum, Alternaria helianthi, Plenodomus lindquistii, Diaporthe helianthi	***Alternaria* spp. (oilseed rape), *Erysiphe cruciferarum, Zymoseptoria tritici, Oculimacula* spp.**	***Blumeria graminis***

Figure ~~13~~ 12: Combined risk analysis (modified after Brent and Hollomon 2007)

Score	Risk class
0.5 - 2	low risk
3 - 6	medium risk
9	high risk

An alternative model is suggested by Brent (2007) and a new and updated version of the original paper (EPPO 2003) is also published by EPPO (2015). The position of the fungicides and the different pathogens can be made in this model more differentiated and our estimation is shown in Figure 14. The positions were allocated considering the current knowledge and experience on the fungicides and pathogens.

1: DMI on *Oculimacula* spp., *Sclerotinia sclerotiorum, Alternaria helianthi, Plenodomus lindquistii, Diaporthe helianthi*
2: DMI on *Zymoseptoria tritici, Erysiphe cruciferarum, Alternaria* spp. (on oilseed rape)
3: DMI on *Blumeria graminis* f.sp. *tritici* (as already indicated in the chart)
4: SDHI on *Oculimacula* spp., *Sclerotinia sclerotiorum, Alternaria helianthi, Plenodomus lindquistii, Diaporthe helianthi*
5: SDHI on *Zymoseptoria tritici, Erysiphe cruciferarum, Alternaria* spp. (on oilseed rape)
6: SDHI on *Blumeria graminis* f.sp. *tritici*

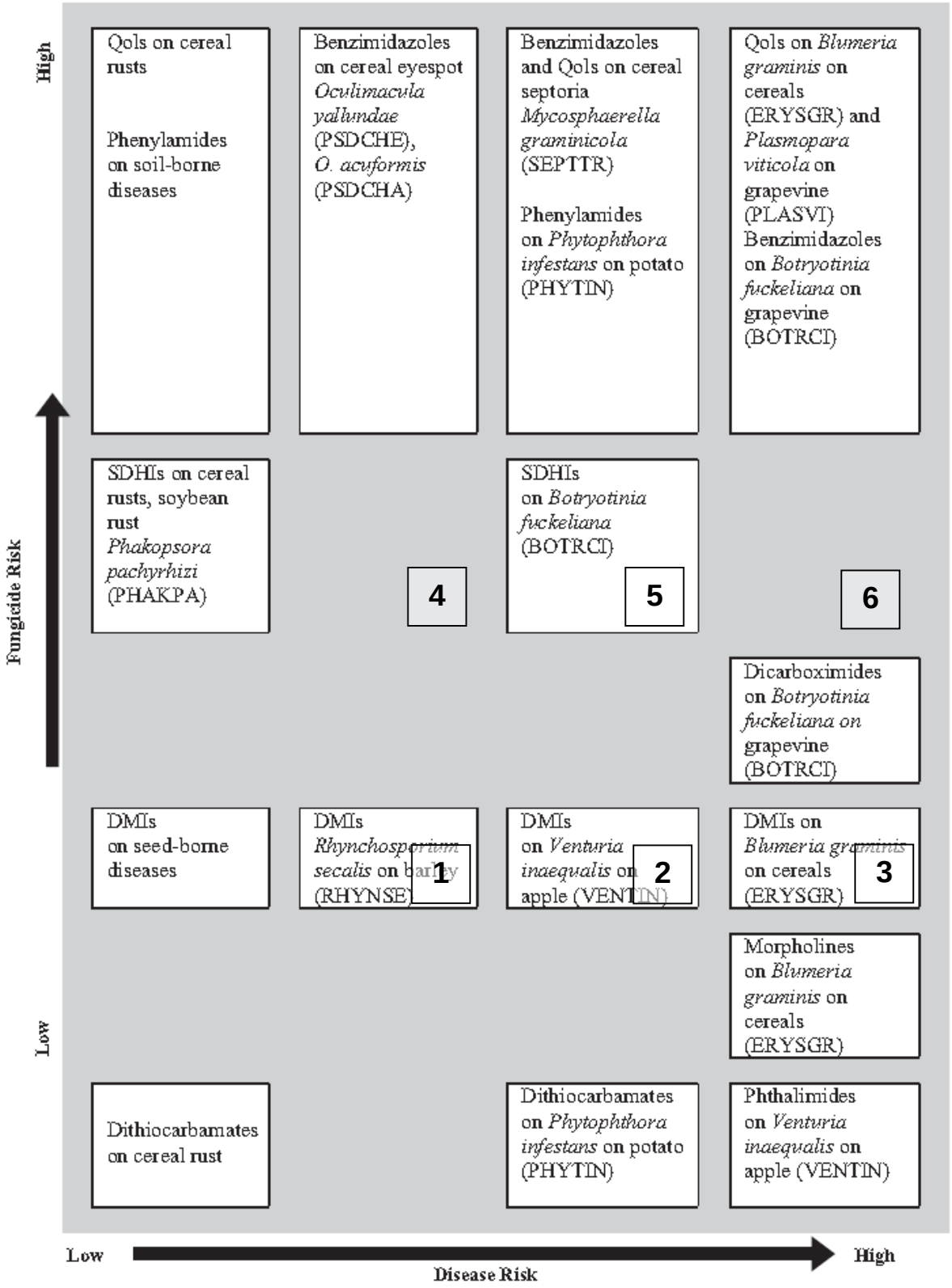

Figure ~~14~~ 13: Scheme for visualizing the combined resistance risk (EPPO 2015)

These diagrams exemplify interactions between inherent fungicide and pathogen risks of resistance development. The risk categorisation is approximate, and the scores are arbitrary. Nevertheless, these are probably the best estimates that can be made in the light of current knowledge. They represent risks under conditions of unrestricted fungicide use and severe, sustained disease pressure.

Taken the results of both analyses together, we classify the combined risks as follows:

Oculimacula spp., *Sclerotinia sclerotiorum, Alternaria helianthi, Plenodomus lindquistii, Diaporthe helianthi* x DMI: **low to medium**

Zymoseptoria tritici, Blumeria graminis f.sp. *tritici, Erysiphe cruciferarum, Alternaria* spp. (on oilseed rape) x DMI: **medium**

Oculimacula spp., *Sclerotinia sclerotiorum, Alternaria helianthi, Plenodomus lindquistii, Diaporthe helianthi* x SDHI: **medium**

Zymoseptoria tritici, Blumeria graminis f.sp. *tritici, Erysiphe cruciferarum, Alternaria* spp. (on oilseed rape) x SDHI **medium to high**

3.3.4 Acceptability of the resistance risk under unrestricted use

This chapter describes the acceptability of the resistance risk under unrestricted use. If it is not acceptable, resistance management strategies have to be applied. "Unrestricted" means in this context multiple solo applications of the compound.

The analysis of the combined resistance risk showed that the risk is not acceptable for *Zymoseptoria tritici, Blumeria graminis* f.sp. *tritici, Erysiphe cruciferarum, Alternaria* spp. (on oilseed rape) and DMIs under unrestricted use of DMIs. It is also not acceptable for all of the target pathogens of this Resistance Risk analysis and SDHIs under unrestricted use of SDHIs. Therefore, resistance management strategies need to be implemented.

Management strategies are necessary to reduce the risk of resistance development. The key of resistance management strategies is the reduction of selection pressure to a specific mode of action. Different modifiers that lead to such a reduction will be implemented in the resistance management strategy and are described in the next chapter.

3.3.5 Management strategy

The objective of anti-resistance management strategies is the reduction of selection pressure to avoid or delay the occurrence of resistance.

This can be achieved by good agricultural practice, which leads to less infection pressure (e.g. phytosanitary measurements, cultivation of less susceptible varieties, appropriate crop cultivation unfavourable for the target pathogens). The rules of integrated pest management should be followed to minimise the disease risk and consequently the use of pesticides.

Limiting the number of sprays is also an important factor in delaying the build-up of resistant pathogen populations (van den Berg et al. 2016). The maximum number of applications in oilseed rape and wheat is 1 and in sunflower a maximum of 2 applications per season are intended.

A further tool is the use of fungicide mixtures. Recent studies showed that especially mixtures help in delaying the selection of resistance (Hobbelen *et al.* 2013, 2014, van den Bosch *et al.* 2014). BAS 762 02 F is already a mixture of two compounds with different modes of action, which are both active against most target pathogens of this Resistance Risk Analysis and provides therefore a build-in resistance management.

Since population size of pathogens is lower at disease onset than when already established in the field, selection pressure is less when using preventive applications rather than curative or eradicative spray schemes. Therefore, BAS 762 02 F should be applied in a preventive manner following the recommendations on the label. An optimal timing is also an effective resistance management (van den Berg *et al.* 2013).

BASF is a member of the FRAC SBI and SDHI Working Group and will promote effective anti-resistance management strategies. There are "general guidelines" and "crop specific guidelines" available. Since there are no specific guidelines for oilseed rape and sunflowers provided, the "general guidelines" and the

"guidelines for cereals" are shown below:

SBI: (includes DMI)

General guidelines for using SBI fungicides (all crops)

- Repeated application of SBI fungicides alone should not be used on the same crop in one season against a high-risk pathogen in areas of high disease pressure for that particular pathogen.
- For crop/pathogen situations where repeated spray applications (e.g. orchard crops/powdery mildew) are made during the season, alternation (block sprays or in sequence) or mixtures with an effective non cross-resistant fungicide are recommended.
- Where alternation or the use of mixtures is not feasible because of lack of effective or compatible non cross-resistant partner fungicides, then input of SBI's should be reserved for critical parts of the season or crop growth stage.
- If DMI's or "morpholine" performance should decline and sensitivity testing has confirmed the presence of less sensitive forms, SBI's should only be used in mixture or alternation with effective non cross-resistant partner fungicides.
- The introduction of the new classes of chemistry offers new opportunities for more effective resistance management. The use of different mode of actions should be maximised for the most effective resistance management strategies.
- Users must adhere to the manufacturers' recommendations. In many cases, reports of "resistance" have, on investigation, been attributed to cutting recommended rates of use, or to poor or miss-timed application.
- Fungicide input is only one aspect of crop management. Fungicide use does not replace the need for resistant crop varieties, good agronomic practice, plant hygiene/sanitation, etc.

Guidelines for using SBI fungicides on cereal crops

- Repeated application of DMI or "morpholine" fungicides alone should not be used on the same crop in one season against a high-risk pathogen in areas of high disease pressure for that particular pathogen.
- When used in mixture recommended effective rates of the SBI should be maintained.
- Split and reduced rate programmes, using multiple repeated applications at dose rates below Manufacturer's recommendations, provide continuous selection pressure and accelerate the development of resistant populations, and therefore must not be used.
- To ensure good performance in situations of high disease pressure it is of importance to adhere to dosages and spray timings as recommended by manufacturers. Highly curative late applications should be avoided. Mixing with a non-SBI fungicide at effective dose rates may contribute to a higher level of disease control.
- The "morpholine" fungicides are effective non-cross-resistant partner fungicides for DMI's on cereals for the control of powdery mildew.

SDHI:

General guidelines for using SDHI fungicides (all crops)

Strategies and General Guidelines (foliar applications)

- Strategies for the management of SDHI fungicide resistance, in all crops are based on the statements listed below. These statements serve as a fundamental guide for the development of local resistance management programs.
- Resistance management strategies have been designed in order to be proactive and to prevent or delay the development of resistance to SDHI fungicides.
- A fundamental principle that must be adhered to when applying resistance management strategies for SDHI fungicides is that:
    - The SDHI fungicides (benodanil, bixafen, boscalid, carboxin, fenfuram, fluopyram, flutolanil, furametpyr, isopyrazam, mepronil, oxycarboxin, penthiopyrad, sedaxane, thifluzamide) are in the same cross-resistance group.
- Fungicide programs must deliver effective disease management. Apply SDHI fungicide based

products at effective rates and intervals according to manufacturers' recommendations.

- Effective disease management is a critical component to delay the buildup of resistant pathogen populations.
- The number of applications of SDHI fungicide based products within a total disease management program must be limited.
- When mixtures are used for SDHI fungicide resistance management, applied as tank mix or as a co-formulated mixture, the mixture partner:
  - should provide satisfactory disease control when used alone on the target disease
  - must have a different mode of action
- SDHI fungicides should be used preventively or at the early stages of disease development.

Guidelines for using SDHI fungicides on cereal crops
Foliar applications

- Apply SDHI fungicides always in mixtures
- The mixture partner:
  - ✓ should provide satisfactory disease control when used alone on the target disease
  - ✓ must have a different mode of action
- Apply a maximum of 2 SDHI fungicide containing sprays per cereal crop.

Apply the SDHI fungicide preventively or as early as possible in the disease cycle. Do not rely only on the curative potential of SDHI fungicides. Strongly reduced rate programs including multiple applications must not be used. Refer to manufacturers' recommendations for rates.
The responsible usage of different measures provides under the current knowledge an effective anti-resistance management strategy.

Implementation of the management strategy

BASF promotes an awareness of fungicide resistance management in product leaflets and training sessions to sales personnel, distributors and growers' associations. The latest issues relating to fungicide resistance are discussed with the BASF technical managers from all regions of the world so that the information from individual countries can be passed on as quickly as possible to the other countries. In addition, BASF actively participates in the FRAC meetings for all presently established Working Groups. In this way, every attempt is made to formulate and promote resistance management strategies and the rational use of its fungicides.

Monitoring, reporting and reacting to changes in performance

Regular monitoring studies are running for *Sclerotinia sclerotiorum* and *Zymoseptoria tritici* for DMIs and SDHIs. In case of field failure, which cannot be explained by other agronomic parameters, the sensitivity of the target pathogens of this Resistance Risk Analysis to mefentrifluconazole and boscalid will be analysed.

Regulatory authorities will be informed at an early stage about all cases of field failure known to be due to resistance. Changes in sensitivity will be communicated in the FRAC working groups and may result in modifications to the recommended resistance management strategies.

Comments of zRMS on:
Information on the occurrence or possible occurrence of the development of resistance (3.3)

BAS 762 02 F (Revydas / Brelyco) is a co-formulated mixture of two active substances: mefentrifluconazole (chemical group: triazoles; group name: DMI-fungicides (DeMethylation Inhibitors, SBI: Class I); FRAC target site and code: G1 # 3) and boscalid (chemical group: pyridine-carboxamides; group name: SDHI (Succinate-dehydrogenase inhibitors); FRAC target site and code: C2 # 7). Active substances differ in their mode of action. Mefentrifluconazole acts by blocking of sterol biosynthesis in membranes (inhibition of cytochrome P450 sterol 14α-demethylase (CYP51)), whereas boscalid inhibits respiration process (inhibition of succinate-dehydrogenase - complex II in the mitochondrial electron transport chain). Mefentrifluconazole is classified by FRAC as medium risk of resistance fungicide, whereas boscalid belongs to medium to high risk of resistance fungicides. For both active

substance the resistance management strategy is required.

By analysing data from FRAC List of First confirmed cases of Plant Pathogenic Organisms Resistant to Disease Control Agents (revised in May 2020), cases of resistance of *Erysiphe graminis*, *Zymoseptoria tritici* and *Pseudocercosporella herpotrichoides* on wheat do DMI-fungicides and evidences of resistance of *Zymoseptoria tritici* on wheat and *Sclerotinia sclerotiorum* on oilseed rape to SDHI fungicides have been documented.
Additionally, according to the FRAC Pathogen Risk List (revised in September 2019), *Blumeria graminis* on wheat is classified as high risk of development of resistance to fungicides; *Zymoseptoria tritici* and *Oculimacula* spp. (*Pseudocercosporella herpotrichoides*) on wheat, *Alternaria brassicicola* on oilseed rape, *Erysiphe cruciferarum* on various crops are classified as pathogen of medium risk of resistance to fungicides; *Alternaria helianthi*, *Diaporthe helianthi* and *Phoma macdonaldii* (*Leptoshaeria lindguistii*) on sunflower, and *Sclerotinia sclerotiorum* on various crops are listed among low-risk pathogens.

The applicant has also presented results from available DMI and SDHI sensitivity/ monitoring data to show the current status of resistance of target pathogens. The last DMI sensitivity data for *Erysiphe graminis* on wheat, *Sclerotinia sclerotiorum* on oilseed rape and sunflower, *Septoria tritici* on wheat, *Oculimacula* species on wheat indicate a stable sensitivity on European level. SDHI sensitivity data from 2018 indicate low frequency of adapted isolates of *Sclerotinia sclerotiorum* on oilseed rape and sunflower, detected in FR – mutations associated to decreased sensitivity noted in monitoring programs. For other monitored pathogens: *Septoria tritici*, *Erysiphe graminis* on wheat, the last data indicate that the majority or all isolates were sensitive to SDHI fungicides in monitored European countries.

The combined resistance risk analysis presented by the applicant, classifies the risk as follows:
Oculimacula spp., *Sclerotinia sclerotiorum, Alternaria helianthi, Plenodomus lindquistii, Diaporthe helianthi* x DMI: low to medium
Zymoseptoria tritici, Blumeria graminis f.sp. *tritici, Erysiphe cruciferarum, Alternaria* spp. (on oilseed rape) x DMI: medium
Oculimacula spp., *Sclerotinia sclerotiorum, Alternaria helianthi, Plenodomus lindquistii, Diaporthe helianthi* x SDHI: medium
Zymoseptoria tritici, Blumeria graminis f.sp. *tritici, Erysiphe cruciferarum, Alternaria* spp. (on oilseed rape) x SDHI medium to high**,**
indicating that, the resistance management strategy is required and needs to be implemented.

The following resistance management strategy is recommended to be included in the label of BAS 762 02 F:
"The fungicide Revydas / Brelyco contains two active substances: mefentrifluconazole from triazole chemical group (Sterol biosynthesis inhibitors – DMI, FRAC code G1/3) and boscalid from pyridine-carboxamides chemical group (Succinate-dehydrogenase inhibitors – SDHI, FRAC code C2/7). As a part of anti-resistance strategy the number of applications with SDHI and Qol fungicides should be limited. Revydas / Brelyco can be applied only once per season in oilseed rape and wheat and maximum two times per season in sunflower. Moreover it is recommended to use the fungicide Revydas / Brelyco:
- mainly preventively or at the early stages of disease development
- only at the recommended dose rate, according to the recommendations contained in the product label
- alternately with other fungicides belonging to different chemical groups with different mode of action"
The zRMS considers the proposed resistance management strategy to be sufficient but all cMS may wish to consider these recommendations in line with the resistance situation in individual countries or their own specific requirements.

3.4 Adverse effects on treated crops (KCP 6.4)

In this chapter, results from all trials (with or without diseases) are presented for the phytotoxicity (3.4.2). Concerning yield and quality data, only results from efficacy trials without diseases, which situation is equivalent to selectivity trials, are presented here in order to provide supporting evidence. Results from efficacy trials with disease were presented in chapter 3.2.3.

Trials with no disease or trials with disease below the infection threshold in the untreated are considered as trials without disease for purpose of this chapter.

Trial methodology and standard products used in the trials without disease were the same as in the trials with disease which were presented in chapter 3.2.3 of the BAD.

Altogether ~~60~~ 65 trials without disease in oilseed rape, 8 trials in sunflower and 1 trial in wheat are presented in this section.

Information on trials submitted in Oilseed rape

In total ~~60~~ of 65 disease free trials were conducted in oilseed rape. The distribution of trials by country and year and by EPPO zone is provided in Table 3.4-1 and
Table 3.4-2.

Table 3.4-1: Distribution of trials by location and year; OSR, trials without disease

Crop	EPPO Zone	Country	Year		TOTAL
			2018	2019	per country
Oilseed Rape	Maritime	CZ	2		**2**
		DE	7	5	**12**
		DK	3	~~2~~ 3	~~5~~ **6**
		FR	9	7	**16**
		SE		1	**1**
		UK	1	2	**3**
	North East	LV	~~1~~ 3	2	~~3~~ **5**
		PL	6	4	**10**
	South East	HU	1	2	**3**
		RO		2	**2**
		SK	3	2	**5**
Total BRSNW					~~60~~ **65**

Table 3.4-2: Distribution of trials by EPPO zone; OSR, trials without disease

Crop	EPPO Zone	TOTAL per zone
BRSNW	Maritime	~~39~~ 40
	North East	~~11~~ 15
	South East	10
TOTAL ALL		~~60~~ **65**

Information on trials submitted in Sunflower

In total 8 disease free trials (trials with no or very low symptoms of disease) were conducted in sunflower. The distribution of trials by country and year and by EPPO zone is provided in Table 3.4-3 and
Table 3.4-4.

Table 3.4-3: Distribution of trials by location and year; Sunflower, trials without disease

Crop	EPPO Zone	Country	Year		TOTAL
			2018	2019	per country
Sunflower	Maritime	FR	1	2	3
	South East	HU	5		5
Total					8

Table 3.4-4: Distribution of trials by EPPO zone; Sunflower, trials without disease

Crop	EPPO Zone	TOTAL per zone
Sunflower	Maritime	3
	South East	5
TOTAL ALL		8

Information on trials submitted in Wheat

One disease free trial out of North East EPPO zone is available in wheat.

3.4.1 Phytotoxicity to host crop (KCP 6.4.1)

The available assessments of phytotoxicity symptoms conducted within the efficacy trials (both with and without disease) are presented in this chapter for each crop.

Oilseed rape

The phytotoxicity to the host crop was assessed in ~~all~~ 162 trials in oilseed rape, out of them ~~102~~ 97 trials in presence of disease and ~~60~~ 65 in absence of disease.

Altogether 84 different varieties were tested as presented in Table 3.4-5.

Table 3.4-5: Varieties used in trials, Oilseed rape

Varieties tested in oilseed rape					
ABAKUS (1)	BLUESTAR (2)	DK EXPRESSION (2)	ES VALEGRO (1)	MEMORI CS (1)	PT228 (3)
AC 736 (1)	BOGART (2)	DK EXPRIT (1)	EXCEPTION (1)	MENHIR (2)	PT240 (1)
ALASCO (1)	BUTTERFLY (2)	DK EXSTORM (1)	EXCLAIM (1)	MENTOR (1)	PX 125 CL (1)
ALICANTE (2)	CAMPUS (1)	DK EXTENSO (1)	EXSTORM (2)	MERCEDES (1)	ROCCA (1)
ALPAGA (1)	CONRAD CL (3)	DK EXTRACT (2)	FERNANDO (1)	ODEON (1)	ROHAN (1)
ANDERSON (1)	CORTES (1)	DK IMISTAR (1)	GRAF (1)	PAMELA (1)	SHERPA (1)
ANNAPOLIS (1)	CRISTIANO KWS (1)	DK IMMINENT (1)	HYBRIROCK (6)	PANAMA F1 (1)	SHIELD (1)
ARCHITECT (7)	CUZZCO (1)	DK IMPRESSION C (1)	IVAN 106 (6)	PHOENIX (1)	STARTER (1)
ARIZONA (1)	DALTON (1)	DK INSPIRATION (1)	KADORE (2)	PICTO (1)	SY ALIBABA (4)
ARSENAL (3)	DK EXCELLIUM (1)	DK SEGUEL (1)	KWS UMBERTO (3)	POZNANIAK (3)	SY ALISTOR (1)
ASTRONOM (1)	DK EXCEPTION (9)	ES ASTRID (1)	LORENZ (6)	PR44D06 (4)	TREZZOR (1)
ATTLETICK (2)	DK EXEPTION (1)	ES IMPERIO (1)	MANITOBA (1)	PR44W29 (5)	VERITAS (1)
AVATAR (2)	DK EXLIBRIS (4)	ES MAMBO (1)	MANZANA (1)	PR46W20 (4)	VISBY (7)
BIRDY (1)	DK EXPANSION (2)	ES MONACO (1)	MELANGE 3V (1)	PT225 (2)	ZAKARI CS (5)

The range of presented trials covers also the application timings up to BBCH 75 which is considered as the worst case scenario.

No symptom of phytotoxicity was recorded in any trial. See an overview in Table 3.4-6.

Table 3.4-6: Phytotoxicity of BAS 762 02 F, Oilseed rape

Number of trials with…		Efficacy trials (162 trials)			
		with disease (~~102~~ 97 trials)		without disease (~~60~~ 65trials)	
		BAS 762 02 F	BAS 9488 0 F	BAS 762 02 F	BAS 9488 0 F
		1 L/ha	1 L/ha	1 L/ha	1 L/ha
Maximum of phytotoxicity recorded during the trials	0% to 5%	~~102~~ 97	~~102~~ 97	~~60~~ 65	~~60~~ 65
	>5% to 10%	-	-	-	-
	>10% to 15%	-	-	-	-
	>15 %	-	-	-	-
Level of symptoms at the last assessments	0% to 5%	~~102~~ 97	~~102~~ 97	~~60~~ 65	~~60~~ 65
	>5% to 10%	-	-	-	-
	>10% to 15%	-	-	-	-
	>15 %	-	-	-	-

BAS 762 02 F was perfectly selective in oilseed rape without any impact on the crop.

Sunflower

The phytotoxicity to the host crop was assessed in all 84 trials in sunflower, out of them 76 trials in presence of disease and 8 in absence of disease.

Altogether 38 different varieties were tested as presented in Table 3.4-7.

Table 3.4-7: Varieties used in trials, Sunflower

Varieties tested in oilseed rape			
ACCORDIS CLP (1)	HOLERON (1)	NK NEOMA (2)	P64LP 130 (2)
BACARDI (5)	IMIDOR (1)	P 64 LE 25 (1)	PARAISO 102 CL (1)
CLLIF (3)	LG 50.635 (1)	P37N01 (1)	RGT BUFFALLO (1)
CLLUB (2)	LG 5478 (2)	P63LE10 (1)	SUBARO HTS (1)
ES BELLA (2)	LG 5492 HO CL (1)	P63LE113 (1)	SY RIALTO (1)
ES IDILLIC (1)	LG 56.58 CL (3)	P64LE99 (5)	SY VALEO (1)
ES UNIC (1)	LG 5633 CL (1)	P64BB01 (3)	TRANSOL (1)
EXPERTO HO (2)	MARQUESA (2)	P64HE01 (1)	VELLOX (1)
FAUSTO ST (3)	NEOSTAR (7)	P64HE118 (1)	
FD15E27 (1)	NK BRIO (5)	P64LE25 (14)	

The range of presented trials covers the application timings up to BBCH 75 which is considered as the worst case scenario.

No symptom of phytotoxicity was recorded in any trial. See an overview in Table 3.4-8.

Table 3.4-8: Phytotoxicity of BAS 762 02 F, Sunflower

Number of trials with…		Efficacy trials (84 trials)					
		with disease (76 trials)			without disease (8 trials)		
		BAS 762 02 F		BAS 9488 0 F	BAS 762 02 F		BAS 9488 0 F
		1 L/ha	2x 1 L/ha	1 L/ha	1 L/ha	2x 1 L/ha	1 L/ha
Maximum of phytotoxicity recorded during the trials	0% to 5%	76	22	76	8	2	8
	>5% to 10%	-		-	-		-
	>10% to 15%	-		-	-		-
	>15 %	-		-	-		-
Level of symptoms at the last assessments	0% to 5%	76	22	76	8	2	8
	>5% to 10%	-		-	-		-
	>10% to 15%	-		-	-		-
	>15 %	-		-	-		-

BAS 762 02 F was perfectly selective in sunflower without any impact on the crop.

Wheat

The phytotoxicity to the host crop was assessed in 25 trials in wheat, out of them 24 trials in presence of disease and 1 in absence of disease.

Altogether 17 different varieties were tested as presented in Table 3.4-9.

Table 3.4-9: Varieties used in trials, Wheat

Varieties tested in wheat					
ARKADIA (2)	DINOSOR (2)	HONDIA (2)	MONOPOL (3)	PRINCEPS (1)	TORP (1)
BOHEMIA (1)	EDVINS (1)	JB ASANO (1)	PANKRATZ (1)	SKAGEN (1)	ZEPPELIN (1)
DICHTER (1)	ETANA (2)	KWS SISKIN (2)	PATRAS (1)	TOBAK (2)	

No symptom of phytotoxicity was recorded in any trial. See an overview in Table 3.4-10.

Table 3.4-10: Phytotoxicity of BAS 762 02 F, Winter wheat

Number of trials with…		Efficacy trials (25 trials)					
		with disease (24 trials)			without disease (1 trial)		
		BAS 762 02 F	BAS 9314 1 F	BAS 560 00 F	BAS 762 02 F	BAS 9314 1 F	BAS 560 00 F
		1 L/ha	0,8 L/ha	0,5 L/ha	1 L/ha	0,8 L/ha	0,5 L/ha
Maximum of phytotoxicity recorded during the trials	0% to 5%	25	25	25	1	1	1
	>5% to 10%	-	-	-	-	-	-
	>10% to 15%	-	-	-	-	-	-
	>15 %	-	-	-	-	-	-
Level of symptoms at the last assessments	0% to 5%	25	25	25	1	1	1
	>5% to 10%	-	-	-	-	-	-
	>10% to 15%	-	-	-	-	-	-
	>15 %	-	-	-	-	-	-

BAS 762 02 F was perfectly selective in wheat without any impact on the crop.

Summary and conclusion

Phytotoxicity to the host crop was tested in a large number of trials in oilseed rape (162), sunflower (84) and wheat (25). No symptom of phytotoxicity was recorded in any trial.

In conclusion, BAS 762 02 F at the target dose rate according to the GAP can be considered perfectly selective of oilseed rape, sunflower and wheat.

Comments of zRMS on:
Phytotoxicity to host crop (3.4.1); Tables: 3.4-6, 3.4-8, 3.4-10

Phytotoxicity was assessed in 271 trials, including trials carried out in the presence of disease (a total of 197 trials conducted in target crops: winter oilseed rape (97), sunflower (76), winter wheat (24)) and in the absence of disease or under low disease pressure conditions (a total of 74 trials conducted in target crops: winter oilseed rape (65), sunflower (8), winter wheat (1)). No phytotoxicity symptoms have been observed after application of BAS 762 02 in any of the presented trials.

Based on the submitted data, it can be concluded that the tested fungicide BAS 762 02 F applied at maximum dose rate of 1,0 l/cause no phytotoxicity on target crops: winter oilseed rape, sunflower and winter wheat.

3.4.2 Effect on the yield of treated plants or plant product (KCP 6.4.2)

Yield data from efficacy trials with disease were provided in chapter 3.2.3. Results from disease free trials (including the trials with very low infection below the minimum infection threshold) are presented in this chapter.

Oilseed rape

A total of ~~60~~ 65 trials on oilseed rape with no or very low symptoms of disease, carried out between 2018 and 2019, have been harvested to confirm the yield response of BAS 762 02 F in the absence of diseases.

A summary of the data from is presented in Table 3.4-11.

Across the Maritime, the North east and the South east EPPO zones, the results demonstrate that the yield in dt/ha has improved in comparison to the untreated.

In ~~44~~ 58 out of ~~60~~ 65 trials, the yield in dt/ha from the plots treated with BAS 762 02 F was numerically higher in comparison to the yield obtained from the untreated plots. In ~~15~~ 16 trials the difference was statistically significant.

In 7 trials out of ~~60~~ 65, the yield in dt/ha from the plots treated with BAS 762 02 F was numerically lower in comparison to the yield obtained from the untreated plots. In none of them the difference was statistically significant.

In conclusion, BAS 762 02 F at the proposed label rate of 1 L/ha has no negative effect on the yield of the treated oilseed rape.

~~Table 3.4-11: Yield in absence of disease (in dt/ha and % of UTC), Oilseed rape; summary~~

~~EPPO Zone climatic~~			~~Untreated~~	~~BAS 762 02 F 1 L/ha~~		~~BAS 9488 0 F 1 L/ha~~	
			~~dt/ha~~	~~dt/ha~~	~~%UTC~~	~~dt/ha~~	~~%UTC~~
~~Maritime~~	~~n = 39~~	~~mean~~	~~**38,8**~~	~~40,9~~	~~**105,6**~~	~~40,8~~	~~**105,3**~~
		~~(min-max)~~	~~(19,6-57,4)~~	~~(20,3-60,6)~~	~~(87,6-120,8)~~	~~(21-60,4)~~	~~(96,3-117,8)~~
~~North east~~	~~n = 11~~	~~mean~~	~~**30,0**~~	~~34,2~~	~~**116,8**~~	~~32,7~~	~~**111,3**~~
		~~(min-max)~~	~~(17,7-53,4)~~	~~(21,3-56,6)~~	~~(105,6-135,7)~~	~~(19,8-56)~~	~~(81,6-125,3)~~
~~South east~~	~~n = 10~~	~~mean~~	~~**36,8**~~	~~39,7~~	~~**107,1**~~	~~40,1~~	~~**108,7**~~
		~~(min-max)~~	~~(24,4-58,2)~~	~~(22-60,8)~~	~~(90,3-119)~~	~~(24,9-59,7)~~	~~(101,9-119,6)~~
~~Total ALL~~	~~n = 60~~	~~mean~~	~~**36,9**~~	~~39,5~~	~~**107,9**~~	~~39,2~~	~~**107,0**~~
		~~(min-max)~~	~~(17,7-58,2)~~	~~(20,3-60,8)~~	~~(87,6-135,7)~~	~~(19,8-60,4)~~	~~(81,6-125,3)~~

Table 3.4-12: Yield in absence of disease (in dt/ha and % of UTC), Oilseed rape; summary

EPPO Zone climatic			Untreated	BAS 762 02 F 1 L/ha		BAS 9488 0 F 1 L/ha	
			dt/ha	dt/ha	%UTC	dt/ha	%UTC
Maritime	**n = 40**	mean	**38,6**	40,7	**105,7**	40,8	**105,3**
		(min-max)	(19,6-57,4)	(20,3-60,6)	(87,6-120,8)	(21-60,4)	(96,3-117,8)
North east	**n = 15**	mean	**29,8**	33,7	**115,5**	32,7	**111,3**
		(min-max)	(17,7-53,4)	(21,3-56,6)	(105,6-135,7)	(19,8-56)	(81,6-125,3)
South east	**n = 10**	mean	**36,8**	39,7	**107,1**	40,1	**108,7**
		(min-max)	(24,4-58,2)	(22-60,8)	(90,3-119)	(24,9-59,7)	(101,9-119,6)
Total ALL	**n = 65**	mean	**36,3**	38,9	**108,2**	39,2	**107,0**
		(min-max)	(17,7-58,2)	(20,3-60,8)	(87,6-135,7)	(19,8-60,4)	(81,6-125,3)

Sunflower

A total of 8 trials on sunflower with no or very low symptoms of disease, carried out between 2018 and 2019 have been harvested to confirm the yield response of BAS 762 02 F in the absence of diseases. ~~provided data on thousand grain weight and 4 trials provided also data on oil content of the grains harvested from the treated sunflower.~~

A summary of the data ~~from~~ is presented in

Table 3.4-13 (single application),

Table 3.4-14 (double application).

Across the Maritime and the South east EPPO zones, the results demonstrate that neither the double application nor the single application of BAS 762 02 F has no statistically significant effect on the yield of the harvested grains in comparison to the untreated.

In conclusion, BAS 762 02 F at the proposed label rate of 1 L/ha applied once or twice has no negative effect on the yield of the treated sunflower.

Table 3.4-13: Yield in absence of disease (in G and % of UTC), BBCH 99, Sunflower, single application; summary

EPPO Zone climatic			Untreated	BAS 762 02 F 1 L/ha		BAS 9488 0 F 1 L/ha	
			dt/ha	dt/ha	%UTC	dt/ha	%UTC
Maritime	**n = 3**	mean	**32,2**	30,7	**96,2**	30,7	**95,2**
		(min-max)	(22–45,6)	(22,1–42,6)	(93,4–100,4)	(22,1–45,2)	(85,9–100,5)
South east	**n = 5**	mean	**40,6**	40,5	**99,4**	42,5	**104,8**
		(min-max)	(37,8–44,4)	(32,2–47,5)	(83,4–107)	(37,3–47,4)	(96,7–110,1)
Total ALL	**n = 8**	mean	**37,4**	36,8	**98,2**	38,1	**101,2**
		(min-max)	(22–45,6)	(22,1–47,5)	(83,4–107)	(22,1–47,4)	(85,9–110,1)

Table 3.4-14: Yield in absence of disease (in G and % of UTC), BBCH 99, Sunflower, double application; summary

EPPO Zone climatic			Untreated	BAS 762 02 F 1 L/ha		BAS 762 02 F 2x 1 L/ha		BAS 9488 0 F 1 L/ha	
			dt/ha	dt/ha	%UTC	dt/ha	%UTC	dt/ha	%UTC
Maritime	**n = 1**	mean	**22,0**	22,1	**100,4**	21,1	**95,6**	22,1	**100,5**
		(min-max)	(22–22)	(22,1–22,1)	(100,4–100,4)	(21,1–21,1)	(95,6–95,6)	(22,1–22,1)	(100,5–100,5)
South east	**n = 1**	mean	**37,8**	38,2	**101,1**	42,5	**112,4**	41,7	**110,1**
		(min-max)	(37,8–37,8)	(38,2–38,2)	(101,1–101,1)	(42,5–42,5)	(112,4–112,4)	(41,7–41,7)	(110,1–110,1)
Total ALL	**n = 2**	mean	**29,9**	30,2	**100,8**	31,8	**104,0**	31,9	**105,3**
		(min-max)	(22–37,8)	(22,1–38,2)	(100,4–101,1)	(21,1–42,5)	(95,6–112,4)	(22,1–41,7)	(100,5–110,1)

Wheat

Results are available from one trial with very low symptoms of disease that is considered as a trial without disease. The trial was carried out in 2018 in Latvia in the North east climatic EPPO zone. This trial has been harvested to confirm the yield response of BAS 762 02 F in the absence of diseases. ~~Thousand grain weight and hectolitre weight were measured in the trial.~~

A summary of the data from is presented in Table 3.4-15.

The results demonstrate that BAS 762 02 F had no adverse effect on the yield ~~thousand grain weight and the hectolitre weight~~ in comparison to the untreated. The value~~s~~ from the plots treated with BAS 762 02 F was ~~were~~ on the same level as the value~~s~~ from the untreated plots. Wherever the value from the treated plot was numerically ~~lower~~ higher than the value from the untreated plot, the difference was negligible and statistically insignificant.

In conclusion, BAS 762 02 F at the proposed label rate of 1 L/ha has no negative effect on yield of the treated wheat.

Table 3.4-15: Yield in absence of disease (in dt/ha and % of UTC), Wheat; summary

EPPO Zone climatic			Untreated	BAS 762 02 F 1 L/ha		BAS 9314 1 F 0,8 L/ha		BAS 560 00F 0,5 L/ha	
			dt/ha	dt/ha	%UTC	dt/ha	%UTC	dt/ha	%UTC
North east	**n=1**	mean	**41,5**	43,0	**103,7**	44,1	**106,3**	40,0	**96,5**

Comments of zRMS on:
Effect on the yield of treated plants or plant product (3.4.2); Tables: 3.4-11 – 3.4-14

OILSEED RAPE
Yield was recorded in a total of 65 trials, carried out in three EPPO zones (MAR – 40 trials, , NE – 15 trials and SE – 10 trials). The average yield from the plots treated with BAS 762 02 F at dose rate of 1 L/ha was higher by about 6%, 16%, 7% and 8% in MAR, NE, SE and both zones zone respectively, compared with the untreated plots. In individual trials the yield achieved from plots treated with BAS 762 02 F was usually comparable (47 trials) or statistically higher (18 trials: MAR (1), NE (11), SE (6)), than yield from untreated plots. Comparing BAS 762 02 F with standard (BAS 9488 0 F), no statistically significant differences were noted for the yield in most of the trials.
SUNFLOWER
8 trial results are available for yield content after single application of BAS 762 02 F at dose rate of 1 L/ha (MAR - 3 trials, SE - 5 trials). Additionally 2 trials from MAR and SE zone provide yield data after double application of tested fungicide. No significant difference in yield content have been noted between plots treated once or twice with BAS 762 02 F and untreated control. Comparing BAS 762 02 F with standard (BAS 9488 0 F) no statistically significant differences have been assessed.
WHEAT
Results from only one trial demonstrate slight, not statistically significant increase (about 4%) of the yield after application of BAS 762 02 F at dose rate of 1 L/ha, compared with untreated control. The differences between BAS 762 02 F and reference products (BAS 93141 F and BAS 56000 F) were also not significant.

Summarizing, it can be concluded that the tested fungicide BAS 762 02 F applied at dose rate of 1 L/ha has

no adverse effect on the yield of three target crops: winter oilseed rape, sunflower and winter wheat.

3.4.3 Effects on the quality of plants or plant products (KCP 6.4.3)

Oilseed rape

A total of ~~60~~ 65 trials on oilseed rape with no or very low symptoms of disease, carried out between 2018 and 2019, are presented in this chapter. All ~~60~~ 65 trials provided data on thousand grain weight and ~~12~~ 19 trials provided also data on oil content of the grains harvested from the treated oilseed rape.

~~60~~ 65 trial results are available for thousand grains weight, see summary in Table 3.4-16.

Altogether ~~16~~ 19 trials provided information on oil content but in ~~2~~ 1 of them the oil content after the treatment with the reference product was not measured. ~~All 16 results are presented in the detailed table in the BAD but only 14 trials that enable orthogonal comparison of the treatments were included in calculation of the means in the summary table (see~~

~~Table 3.~~4-17: TGW in absence of disease (in G and % of UTC), Oilseed rape; summary

EPPO Zone climatic			Untreated G	BAS 762 02 F 1 L/ha G	BAS 762 02 F 1 L/ha %UTC	BAS 9488 0 F 1 L/ha G	BAS 9488 0 F 1 L/ha %UTC
Maritime	**n = 40**	mean	**4,7**	4,8	**100,7**	4,8	**101,2**
		(min-max)	(3,8-6)	(3,8-6,1)	(94,9-107,2)	(3,7-6,4)	(92,1-108,8)
North east	**n = 15**	mean	**5,0**	5,2	**105,3**	5,0	**101,3**
		(min-max)	(3,8-6,1)	(4,1-6,6)	(98,4-122,7)	(3,5-6,3)	(85,8-113,4)
South east	**n = 10**	mean	**4,5**	4,6	**102,5**	4,6	**102,5**
		(min-max)	(3,6-5,4)	(3,7-5,6)	(98,3-105,1)	(3,8-5,6)	(96,9-106,6)
Total ALL	**n = 65**	mean	**4,8**	4,8	**102,0**	4,8	**101,4**
		(min-max)	(3,6-6,1)	(3,7-6,6)	(94,9-122,7)	(3,5-6,4)	(85,8-113,4)

~~Table 3.4-18).~~

The results across the Maritime, the North east and the South east EPPO zones demonstrate that BAS 762 02 F had no adverse effect on the thousand grain weight and oil content in comparison to the untreated. The values from the plots treated with BAS 762 02 F were on the same level as the values from the untreated plots. Wherever the value from the treated plot was numerically lower than the value from the untreated plot, the difference was negligible and statistically insignificant.

In conclusion, BAS 762 02 F at the proposed label rate of 1 L/ha has no effect on the thousand grain weight and oil content of the treated oilseed rape.

~~**Table 3.4-16: TGW in absence of disease (in G and % of UTC), Oilseed rape; summary**~~

~~EPPO Zone climatic~~			~~Untreated G~~	~~BAS 762 02 F 1 L/ha G~~	~~BAS 762 02 F 1 L/ha %UTC~~	~~BAS 9488 0 F 1 L/ha G~~	~~BAS 9488 0 F 1 L/ha %UTC~~
~~**Maritime**~~	~~**n = 39**~~	~~mean~~	~~**4,7**~~	~~4,8~~	~~**100,7**~~	~~4,8~~	~~**101,3**~~
	-	~~(min-max)~~	~~(3,8-6)~~	~~(3,8-6,1)~~	~~(94,9-107,2)~~	~~(3,7-6,4)~~	~~(92,1-108,8)~~
~~**North east**~~	~~**n = 11**~~	~~mean~~	~~**5,0**~~	~~5,3~~	~~**107,0**~~	~~5,1~~	~~**101,6**~~
	-	~~(min-max)~~	~~(3,8-6,1)~~	~~(4,1-6,6)~~	~~(98,4-122,7)~~	~~(3,5-6,3)~~	~~(85,8-113,4)~~
~~**South east**~~	~~**n = 10**~~	~~mean~~	~~**4,5**~~	~~4,6~~	~~**102,5**~~	~~4,6~~	~~**102,5**~~
	-	~~(min-max)~~	~~(3,6-5,4)~~	~~(3,7-5,6)~~	~~(98,3-105,1)~~	~~(3,8-5,6)~~	~~(96,9-106,6)~~
~~**Total ALL**~~	~~**n = 60**~~	~~mean~~	~~**4,7**~~	~~4,8~~	~~**102,1**~~	~~4,8~~	~~**101,5**~~
	-	~~(min-max)~~	~~(3,6-6,1)~~	~~(3,7-6,6)~~	~~(94,9-122,7)~~	~~(3,5-6,4)~~	~~(85,8-113,4)~~

Table 3.4-17: TGW in absence of disease (in G and % of UTC), Oilseed rape; summary

EPPO Zone climatic			Untreated	BAS 762 02 F 1 L/ha		BAS 9488 0 F 1 L/ha	
			G	G	%UTC	G	%UTC
Maritime	**n = 40**	mean	**4,7**	4,8	**100,7**	4,8	**101,2**
		(min-max)	(3,8-6)	(3,8-6,1)	(94,9-107,2)	(3,7-6,4)	(92,1-108,8)
North east	**n = 15**	mean	**5,0**	5,2	**105,3**	5,0	**101,3**
		(min-max)	(3,8-6,1)	(4,1-6,6)	(98,4-122,7)	(3,5-6,3)	(85,8-113,4)
South east	**n = 10**	mean	**4,5**	4,6	**102,5**	4,6	**102,5**
		(min-max)	(3,6-5,4)	(3,7-5,6)	(98,3-105,1)	(3,8-5,6)	(96,9-106,6)
Total ALL	**n = 65**	mean	**4,8**	4,8	**102,0**	4,8	**101,4**
		(min-max)	(3,6-6,1)	(3,7-6,6)	(94,9-122,7)	(3,5-6,4)	(85,8-113,4)

~~**Table 3.4-18: Oil content in absence of disease (in % and % of UTC), Oilseed rape; summary**~~

~~EPPO Zone climatic~~			~~Untreated~~	~~BAS 762 02 F 1 L/ha~~		~~BAS 9488 0 F 1 L/ha~~	
			~~%~~	~~%~~	~~%UTC~~	~~%~~	~~%UTC~~
~~**Maritime**~~	~~**n = 11**~~	~~mean~~	~~47,5~~	~~47,6~~	~~**100,2**~~	~~47,5~~	~~**100,0**~~
	-	~~(min-max)~~	~~(44,7-51,9)~~	~~(45,2-51,7)~~	~~(97,3-102,3)~~	~~(44,8-51,7)~~	~~(97,8-101,2)~~
~~**South east**~~	~~**n = 3**~~	~~mean~~	~~46,3~~	~~46,4~~	~~**100,3**~~	~~46,6~~	~~**100,8**~~
	-	~~(min-max)~~	~~(40,7-51,6)~~	~~(40,4-51,4)~~	~~(99,3-101,8)~~	~~(41,4-51,7)~~	~~(100,2-101,7)~~
~~**Total ALL**~~	~~**n = 14**~~	~~mean~~	~~47,3~~	~~47,4~~	~~**100,2**~~	~~47,3~~	~~**100,1**~~
	-	~~(min-max)~~	~~(40,7-51,9)~~	~~(40,4-51,7)~~	~~(97,3-102,3)~~	~~(41,4-51,7)~~	~~(97,8-101,7)~~

Table 3.4-19: Oil content in absence of disease (in % and % of UTC), Oilseed rape; summary

EPPO Zone climatic			Untreated	BAS 762 02 F 1 L/ha		BAS 9488 0 F 1 L/ha	
			%	%	%UTC	%	%UTC
Maritime	**n = 13**	mean	47,3	47,3	**100,1**	47,7	**100,0**
		(min-max)	(42,1-51,9)	(41,5-51,7)	(97,3-102,3)	(44,8-51,7)	(97,8-101,2)
North east	**n = 5**	mean	**45,9**	46,1	**100,3**	46,1	**100,5**
		(min-max)	(39,1-51,6)	(39,6-51,4)	(99,3-101,8)	(39,1-51,7)	(100-101,7)
South east	**n = 1**	mean	42,6	43,2	**101,4**	-	-
		(min-max)					
Total ALL	**n = 19**	mean	46,7	46,7	**100,2**	47,2	**100,2**
		(min-max)	(39,1-51,9)	(39,6-51,7)	(97,3-102,3)	(39,1-51,7)	(97,8-101,7)

Sunflower

A total of 8 trials on sunflower with no or very low symptoms of disease, carried out between 2018 and 2019, provided data on thousand grain weight and 4 trials provided also data on oil content of the grains harvested from the treated sunflower.

A summary of the data from is presented in Table 3.4-20 (TGW, single application),

Table 3.4-21 (TGW, double application),

Table 3.4-22 (oil content, single and double application).

Across the Maritime and the South east EPPO zones, the results demonstrate that neither the double application or the single application of BAS 762 02 F has no statistically significant effect on thousand grains weight and on the oil content of the harvested grains in comparison to the untreated.

In conclusion, BAS 762 02 F at the proposed label rate of 1 L/ha has no effect on the thousand grain weight and oil content of the treated sunflower.

Table 3.4-20: TGW in absence of disease (in G and % of UTC), BBCH 99, Sunflower, single application; summary

EPPO Zone climatic			Untreated	BAS 762 02 F 1 L/ha		BAS 9488 0 F 1 L/ha	
			G	G	%UTC	G	%UTC
Maritime	**n = 3**	mean	**50,2**	48,5	**98,2**	49,5	**98,6**
		(min-max)	(41,2–65,6)	(43,6–58,2)	(88,8–106)	(38,8–65,4)	(88,8–107,1)
South east	**n = 5**	mean	**60,5**	60,2	**99,5**	60,5	**100,1**
		(min-max)	(56,7–65,2)	(56,1–66,6)	(93,5–104,5)	(56,7–66,8)	(89,8–104,7)
Total ALL	**n = 8**	mean	**56,6**	55,8	**99,0**	56,4	**99,5**
		(min-max)	(41,2–65,6)	(43,6–66,6)	(88,8–106)	(38,8–66,8)	(88,8–107,1)

Table 3.4-21: TGW in absence of disease (in G and % of UTC), BBCH 99, Sunflower, double application; summary

EPPO Zone climatic			Untreated	BAS 762 02 F 1 L/ha		BAS 762 02 F 2x 1 L/ha		BAS 9488 0 F 1 L/ha	
			G	G	%UTC	G	%UTC	G	%UTC
Maritime	**n = 1**	mean	**43,7**	43,6	**99,7**	41,1	**94,1**	38,8	**88,8**
		(min-max)	(43,7–43,7)	(43,6–43,6)	(99,7–99,7)	(41,1–41,1)	(94,1–94,1)	(38,8–38,8)	(88,8–88,8)
South east	**n = 1**	mean	**60,1**	62,7	**104,5**	62,2	**103,6**	62,5	**104,1**
		(min-max)	(60,1–60,1)	(62,7–62,7)	(104,5–104,5)	(62,2–62,2)	(103,6–103,6)	(62,5–62,5)	(104,1–104,1)
Total ALL	**n = 2**	mean	**51,9**	53,2	**102,1**	51,7	**98,9**	50,7	**96,5**
		(min-max)	(43,7–60,1)	(43,6–62,7)	(99,7–104,5)	(41,1–62,2)	(94,1–103,6)	(38,8–62,5)	(88,8–104,1)

Table 3.4-22: Oil content in absence of disease (in % and % of UTC), BBCH 99, Sunflower, single and double application; summary

EPPO Zone climatic			Untreated	BAS 762 02 F 1 L/ha		BAS 762 02 F 2x 1 L/ha		BAS 9488 0 F 1 L/ha	
			%	%	%UTC	%	%UTC	%	%UTC
Maritime	**n = 1**	mean	**47,5**	46,0	**96,8**	~~-~~ 46,2	97,3	-	-
		(min-max)	(47,5–47,5)	(46–46)	(96,8–96,8)	-	-	-	-
South east	**n = 3**	mean	**46,7**	47,0	~~98,3~~ **100,6**	46,8	~~-~~ 100,7	-	-
		(min-max)	(46,5–46,9)	(46,9–47,2)	(~~94,2~~ 100–100,8)	-	-	-	-
Total ALL	**n = 4**	mean	**46,9**	46,7	~~97,9~~ **99,6**	-	-	-	-
		(min-max)	(46,5–47,5)	(46–47,2)	(~~94,2~~ 96,8–100,8)	-	-	-	-
	n = 2	mean	**47**~~,5~~	~~46,0~~ 46,5	~~96,8~~ **98,8**	~~46,2~~ 46,5	~~97,3~~ **99,0**	-	-
		(min-max)	(~~47,5~~ 46,5–47,5)	(46–46,9)	(96,8–~~96,8~~ 100,8)	(46,2–~~46,2~~ 46,8)	(97,3–~~97,3~~ 100,7)	-	-

Wheat

Results are available from one trial with very low symptoms of disease that is considered as a trial without disease. The trial was carried out in 2018 in Latvia in the North east climatic EPPO zone. Thousand grain weight and hectolitre weight were measured in ~~the~~ this trial.

A summary of the data from is presented in Table 3.4-23.

The results demonstrate that BAS 762 02 F had no adverse effect on the thousand grain weight and the hectolitre weight in comparison to the untreated. The values from the plots treated with BAS 762 02 F were on the same level as the values from the untreated plots. Wherever the values from the treated plots ~~was~~ were numerically ~~lower~~ higher than the values from the untreated plots, the difference was negligible and statistically insignificant.

In conclusion, BAS 762 02 F at the proposed label rate of 1 L/ha has no effect on the thousand grain weight and the hectolitre weight of the treated wheat.

Table 3.4-23: Quality parameters in absence of disease (in G or KG and % of UTC), Wheat; summary

EPPO Zone climatic	Quality parameter measured	Rating Unit		Untreated	BAS 762 02 F 1 L/ha		BAS 9314 1 F 0,8 L/ha		BAS 560 00 F 0,5 L/ha	
				weight	weight	%UTC	weigh	%UTC	weigh	%UTC
North east n=1	TGW	G	mean	**55,9**	56,4	**100,8**	56,7	**101,4**	56,0	**100,2**
	HLW	KG	mean	**84,9**	85,4	**100,6**	85,0	**100,1**	85,1	**100,2**

Comments of zRMS on:
Effects on the quality of plants or plant products (3.4.3); Tables: 3.4-15 – 3.4-20

OILSEED RAPE (TGW, oil content)
65 trials provide data on TGW (MAR (40), NE (15), SE (10)). Oil content was calculated in 19 trials (MAR (13), NE (5), SE (1)). The average TGW value from all zones was higher by 2% for oilseed rape treated with BAS 762 02 F, compared with TGW calculated for untreated plots. The average TGW value was higher by 0,7%, about 5% and about 3% in MAR, NE and SE zone respectively, compared with untreated plots. In individual trials TGW calculated for BAS 762 02 F was usually comparable (60 trials) or statistically higher (5 trials: MAR(1) NE (3), SE (1)) than TGW calculated for untreated plots. Comparing BAS 762 02 F with standard (BAS 9488 0 F), no statistically significant differences in TGW value were noted in most of the trials. Statistically significant increase of oil content was noted only in 1 Polish trial after application of BAS 762 02 F at dose rate of 1 L/ha, compared with untreated control. In the rest 18 trial no significant differences were noted for oil content value comparing oil content after application of BAS 762 02 F with untreated control. The differences between BAS 762 02 F and standard (BAS 9488 0 F) were also not significant.
SUNFLOWER (TGW, oil content)
8 trial results have been submitted for TGW after single application of BAS 762 02 F at dose rate of 1 L/ha (3 trials from Maritime zone and 5 trials from SE zone). Additionally 2 trials from HU (SE) and FR (MAR) provide data on TGW after double application of tested fungicide. Oil content was calculated in 4 trials (MAR(1), SE (3)), where BAS 762 02 F was applied once at dose rate of 1 L/ha. 2 trials from HU (SE) and FR (MAR) provide data on oil content after double application of tested fungicide. No significant differences have been noted for TGW and oil content of harvested grain in all the trials, comparing plots treated with BAS 762 02 F once or twice at dose rate of 1 L/ha with untreated control. Comparing BAS 762 02 F with standard (BAS 9488 0 F) no statistically significant differences have been also noted.
WHEAT (TGW, HLW)
Results from only one Latvian (NE zone) trial show not statistically significant increase: 0,8% and 0,6% of TGW and HLW respectively after application of BAS 762 02 F at dose rate of 1 L/ha compared with untreated control. The differences between BAS 762 02 F and reference products (BAS 93141 F and BAS 56000 F) were also not significant.

Summarizing, it can be concluded that the tested fungicide BAS 762 02 F applied at dose rate of 1 L/ha has no adverse effect on the yield quality of three target crops: winter oilseed rape, sunflower and winter wheat.

3.4.4 Effects on transformation processes (KCP 6.4.4)

As defined in the EPPO guideline PP 1/243 (2) "Effects of plant protection products on transformation processes", oilseed rape and sunflower are crops that are not considered to be subjected to transformation process studies. For both crops the processing procedure of the harvested seeds is a physical and/or chemical process. Hence, the need of any biological activity such as yeasts, bacteria or fungi is not required.

The EPPO guideline PP 1/243 (2) further defines that no transformation tests are necessary if the applicant can demonstrate that no residues possibly affecting such processes are detectable. As proven in Part B, Section 7, no residues of the product have been found in the grains of the treated wheat. Therefore, no transformation studies on wheat are provided.

In conclusion, based on the fact that oilseed rape and sunflower are not considered as relevant and no residues have been found in the grains of tested wheat, the transformation process studies are not required.

Comments of zRMS on:
Effects on transformation processes (3.4.4)

Based on the submitted data, no adverse effects on transformation processes of wheat seems to be expected.

3.4.5 Impact on treated plants or plant products to be used for propagation (KCP 6.4.5)

In accordance with EPPO Standard PP 1/135 (3), BASF performed germination testing of seeds derived from the harvested plants treated with BAS 762 02 F in several efficacy trials in oilseed rape and sunflower and in 5 specific germination trials in cereals.

Material and Methods

The same method was used to test the germination in oilseed rape, sunflower and cereals. Seed samples from each of the four replications from the treated and untreated plot were collected at harvest to analyze the germination behavior. In some trials (all French trials and some others) a pooled sample out of the 4 replicates was used. In such case no calculation of statistical difference was possible.

100 grains per treatment and 4 replications each were placed in small pots (16 x 26 cm) in sand and covered with 1 cm sand. The trials were carried out in a greenhouse chamber at a temperature of 20°C with 16 h light per day. Water was applied to the crops by hand as necessary. The treated and harvested wheat grains from the season 2018 were tested for seedling germination 10 to 18 weeks after harvest.

Evaluation for germination by counting the seedlings in three classes was done according to the ISTA-methods (chapter 5, The Germination Test, 2006) at growth stage (GS) 12.
1 - normal seedling germination
2 - abnormal seedling germination 3 - not germinated

ln the absence of specific EPPO guidelines for germination trials, the studies with harvested grains have been conducted according to ISTA-methods (chapter 5, The Germination Test, 2006). This is in line with the EPPO guideline PP 1/135 (4), which refers to standard seed testing methods (ISTA) testing of propagating material. The design of the germination trials is in accordance to EPPO guideline PP 1/152 (4). Therewith the trials are valid for the evaluation of harvested grains.

In some trials, the germination rate without differentiation to normally and abnormally germinated seeds was assessed (variable YKEIMF = germination capacity in %).

Oilseed rape

Material and Methods

The germination was tested in ~~18~~ 20 efficacy trials in winter oilseed rape. The plants were treated with BAS 762 02 F at dose rate of 1 L/ha, the application timing ranged from BBCH 61 to 71. The standard product used in all trials was BAS 94~~4~~88 0 F (Propulse) at 1 L/ha. The trials were conducted in the harvest years 2018 and 2019 in the Czech Republic, ~~Denmark~~, France, Germany, ~~Hungary, Latvia, Lithuania,~~ Poland, Romania, Slovakia ~~and Sweden~~.

Results

In all ~~18~~ 20 germination tests carried out on harvested oilseed rape seeds good germination behavior after the treatment with BAS 762 02 F was observed. The germination results obtained after the treatment with BAS 762 02 F were comparable to those observed in the untreated or after the application of the reference product.

In case that the number of abnormally germinated or not germinated seeds was higher or the germination rate was lower after the treatment with BAS 762 02 F, a similar effect was observed also in UTC and on seeds from the plots treated with the standard. Thus, it can be assumed that the reduced germination was not caused by application of BAS 762 02 F.

Conclusion

Based on the presented results it can be concluded that BAS 762 02 F at maximum recommended dose rate of 1 L/ha does not ~~negatively~~ influence negatively the germination behavior of harvested seeds of treated oilseed rape.

Sunflower

Sunflower and maize varieties, cultivated in Europe, are hybrid varieties. To our knowledge, there are no line varieties existing that are of economic importance in sunflower production. Seeds of hybrid crops are not used for propagation since they show a high genetic variability and their use for propagation would result in a significant drop of performance. However, germination tests were conducted in several efficacy trials in sunflower and their results are presented in this chapter.

Material and Methods

The germination was tested in ~~50~~ 54 efficacy trials in sunflower. The plants were treated with BAS 762 02 F at dose rate of 1 L/ha, the application timing ranged from BBCH 31 to 69. The standard product used in all trials was BAS 94 ~~4~~ 88 0 F (Propulse) at 1 L/ha. The trials were conducted in the harvest years 2018 and 2019 in Bulgaria, the Czech Republic, France, ~~Germany,~~ Hungary, Romania and Slovakia.

Results

No significant difference in germination of the harvested seeds was determined between the BAS 762 02 F treated and the untreated plots in ~~all~~ most of the ~~wheat~~ sunflower trials.

In case that the number of abnormally germinated or not germinated seeds was higher or the germination rate was lower after the treatment with BAS 762 02 F, a similar effect was observed also in UTC and on seeds from the plots treated with the standard. Thus, it can be assumed that the reduced germination was not caused by application of BAS 762 02 F.

Conclusion

Based on the presented results it can be concluded that BAS 762 02 F at maximum recommended dose rate of 1 L/ha does not ~~negatively~~ influence negatively the germination behavior of harvested seeds of treated sunflower.

Wheat

In greenhouse trials the influence of previous foliar treatments with 1 L/ha of BAS 762 00 F on germination of cereal seeds was investigated. Harvested grains originated from wheat field trials were tested.
Results
Five winter wheat trials located in various European countries were treated with 1 L/ha BAS 762 00 F at crop growth stage BBCH 49. The untreated check of the wheat showed germination rates between 87,0 and 96,8 %.
No significant difference in germination of the harvested seeds was determined between the BAS 762 00 F treated and the untreated plots in all of the wheat trials.
Conclusion
In conclusion, previous foliar treatments with BAS 762 00 F do not have any impact on germination of the harvested wheat seeds

Comments of zRMS on:
Impact on treated plants or plant products to be used for propagation (3.4.5)

Detailed data on the impact of the fungicide BAS 762 02 F on germination parameters of the harvested seeds of oilseed rape and sunflower have been collected from efficacy trials. The data package includes 20 trials carried out in winter oilseed rape and 54 trials conducted in sunflower. The following germination parameters were recorded: seeds germinated (number), grains normally germinated, grains abnormally germinated, grains not germinated or germination rate (%) in a part of the trials. The trials were carried out in two EPPO zones: Maritime and South-East in the years 2018-2019. BAS 762 02 F was applied at 1 L/ha once in winter oilseed rape and once or twice in sunflower as recommended for use. In the vast majority of trials comparable results of germination parameters between untreated control and treated objects were obtained indicating no negative influence of fungicide BAS 762 02 F on the seeds of tested crops.
For wheat, additional 5 greenhouse trials carried out in PL, FR, ES, NL, IT in 2018 year have been submitted for

the evaluation. Comparing germinated seeds (normal, abnormal, not germinated) originated from winter wheat plots treated or untreated before with BAS 762 00 F at recommended dose rate of 1 L/ha, no significant difference in germination of the harvested seeds was observed, hence **it can be concluded that the tested fungicide has no negative impacts on germination of wheat seeds.**

Summary and conclusion on 3.4

Phytotoxicity to the host crop was tested in a large number of efficacy trials with or without disease presented in the Biological Assessment Dossier: 162 trials in oilseed rape, 84 trials in sunflower and 25 trials in wheat. No symptom of phytotoxicity was recorded in any trial.

It has been proven with large number of disease-free trials that BAS 762 02 F at the proposed maximum label rate has no negative effect on the yield and on parameters as thousand grain weight and oil contents of the treated oilseed rape and sunflower and thousand grain weight and hectolitre weight of the treated wheat.

Germination behaviour of seeds harvested from oilseed rape and wheat treated with single application of BAS 762 02 F at 1 L/ha and from sunflower treated with single and double application of BAS 762 02 F at 1 L/ha was tested. Based on 18 tests on oilseed rape seeds, 50 tests on sunflower seeds and 5 tested on wheat grains it can be concluded that previous foliar treatments with BAS 762 02 F according to the GAP do not have any impact on germination of the harvested seeds of oilseed rape, sunflower and wheat.

In conclusion, no adverse effects to the treated crop can be expected after the application of BAS 762 02 F according to the proposed GAP.

3.5 Observations on other undesirable or unintended side-effects (KCP 6.5)

3.5.1 Impact on succeeding crops (KCP 6.5.1)

A study has been conducted to evaluate the effect of BAS 762 02 F on different succeeding crops. A full report "Cultivation of different crops in substrate treated with BAS 762 02 F (Succeeding crops study)" has been submitted.

Guidelines covered in the succeeding crops study:

- EPPO Guideline PP 1/207 (2)
- EPPO Guideline PP 1/135 (4)
- ISTA method, 2004, chapter 5
- BBCH scale 2nd Edition 1997
- BASF SOP Succeeding Crops AUG 2014.docx

Introduction

The germination and growth of different crops grown in substrate treated with BAS 762 02 F has been evaluated in pot trials in the glasshouse in order to simulate the replanting of various crops following a field failure of a crop treated with BAS 762 02 F.

Material and Methods

Substrate: standard substrate (mix of compost, sand and peat substrate at the ratio 1:1:1)

Pot size: 12 cm

Crops: Seeds of commercial varieties were used. In some crops, for example peas, treated seeds were used. The crops were chosen according the list of crops mentioned in EPPO Guideline Phytotoxicity assessment PP 1/135 (4).

The following 10 species were tested:

Latin name	English name	Variety
Beta vulgaris	Sugar beet	var. Danicia
Brassica napus	Oilseed rape	var. Licapo
Daucus carota	Carrot	var.Laguna F1
Helianthus annuus	Sunflower	var. Sunrich Orange F1
Hordeum vulgare	Winter barley	var. Astrid
Pisum sativum	Pea	var. Livioletta
Solanum tuberosum	Potatoe	var. Bintje
Triticum aestivum	Winter wheat	var. Monopol
Vicia faba	Broad bean	var. Taifun
Zea mays	Maize	var. Ronaldinio

Methods

Before cultivation of the crops, BAS 762 02 F was incorporated into the substrate. According to the PEC soil calculation (Annex 1), a dose rate of 2.0 L/ha BAS 762 02 F (= 600 g active ingredient/ha Mefentrifluconazole + Boscalid) was applied. This is twice the maximum targeted application rate.

Pots (diameter 12 cm, height 9 cm) were filled 8 cm high (5 cm for potato) with untreated and treated substrate, respectively.

The seeds were sown and covered with a layer of substrate depending on the size of the seeds and the pots containing potatoes were filled to the brim after transplanting the tubers. Sowing densities of the different crops and the numbers of replications are listed in the following table:

Crop	# Seeds/pot	# Replications
Winter barley, Winter wheat	20	5
Carrots	10	30
Sugar beets	10	10
Oilseed rape, Sunflower	5	20
Pea, Broad bean	5	15
Maize	5	5
Potato	1	30

The number of replications and seeds/ pot have been statistically determined using power-analyses based upon prior experiments.

All crops were sown five weeks after substrate application. Application date was 2th May 2019; sowing date: 6th Juni 2019.

The trials were carried out in a greenhouse at a temperature between 18 – 22 °C, about 70 % relative humidity and 16 h light per day. The crops were watered by hand as necessary.

Each crop was randomized separately. Treated and untreated pots of each crop were placed side by side in the greenhouse in order to have comparable growing conditions.

Assessments

Phytotoxicity was assessed as a percentage of injured plants at GS 12.
Germination was evaluated by counting the seedlings according to the ISTA-methods (Chapter 5: The Germination Test, 2004), at GS 12.
Plant height in cm (for monocots) and plant weight (fresh matter) in g/plant for all crops were measured at GS 12.

Statistical analysis

The statistical analysis for germination of all crops was performed as Chi-square-test based on the number of germinated plants in the treated and untreated groups.

For comparing plant height in monocots or plant weight in dicots a paired t-test was used, based on the biometric measurements per pot.

Both tests are one-sided and use a confidence level of 5 %. The null hypothesis is that the mean response of the treated group is equal or greater than that of the untreated group. Only where the treated group mean is significantly less than the untreated group will the null hypothesis be rejected.

Product

Code number	Chemical group	Formulation	
BAS 762 02 F	Mefentrifluconazole + Boscalid	100g/l + 200g/l	SC

Predicted Environmental Concentration (PEC) of BAS 762 02 F

Maximum, actual and accumulation concentrations in soil (PECsoil,max, PECsoil,act, PECsoil,acu) were calculated for mefentrifluconazole and for boscalid. The calculations were carried out based on the approach given in the guidances of the FOCUS workgroup.

PECs in the field ("GAP" scenario) were calculated considering the worst-case use pattern of the formulation BAS 762 02 F and the geometry proposed by the FOCUS workgroup. PEC in succeeding crop experiments were calculated for two times higher application rate ("SOP-2" scenario), than the worst-case use rate of BAS 762 02 F, considering the geometry of the containers used for the application in the experiments. Details on the calculations are provided in the appendix of the full report.

Mixing the formulation BAS 762 02 F in a 10 cm soil layer at two times elevated use rate than the use rate in the GAP would result in PECsoil for mefentrifluconazole and for boscalid, that are higher than the PECsoil of the respective compounds after multi-year use of the formulation (considering spray application and 20 cm mixing depth).

Table 3.5-1: PECsoil of mefentrifluconazole and boscalid after yearly, multi-year application of BAS 762 02 F to the worst-case filed use sunflowers (GAP scenario), and the maximum concentration after application in the succeeding crop experiment at twice the application rate (SOP 2)

Substance	GAP scenario Worst case: sunflowers			SOP 2 scenario
	$PEC_{soil,plateau}$ [mg/kg] (20 cm tillage)	**$PEC_{soil,max}$ [mg/kg]**	**$PEC_{soil,accu,max}$ [mg/kg]**	**$PEC_{soil,act}$ [mg/kg]**
Mefentrifluconazole	0,048	0,067	**0,115**	**0,154**
Boscalid	0,093	0,133	**0,226**	**0,308**

Bold + grey field: relevant for the comparison between GAP scenario and the SOP-2 scenario

Results

Phytotoxicity

Neither of the tested crops showed crop injury, when grown in substrate treated with BAS 762 02 F (Table 3.5-2).

Germination

None of the tested crops grown in substrate treated with BAS 762 02 F exhibited a negative influence on germination rate in relation to the untreated substrate (
Table 3.5-2).

Plant weigh

No negative effect on plant weight was observed between the crops grown in substrate treated with BAS 762 02 F and the crops grown in untreated substrate for all the tested crops (

Untreated
BAS 762 02 F

Table 3.5-3).

Plant height

No negative effect on plant height was observed between the crops grown in substrate treated with BAS 762 02 F and the crops grown in untreated substrate for all the tested monocot crops (

Untreated
BAS 762 02 F

Table 3.5-4).

Table 3.5-2: Cultivation of different crops in BAS 762 02 F-treated and untreated substrate: Phytotoxicity and germination 10 – 22 days after sowing/planting

Crop	Average % PHYTOX	Average # Germination normal	Test system	Difference (Untreated – Treated)	P.value	Significant	Average # Germination abnormal	Average # not germinated
Sugar beet	0	6,6	NA	NA	NA	NA	0,30	3,1
Sugar beet	0	**6,2**	**Chi-squared test**	**0,04**	**0,33**	**No**	0,30	3,5
Canola	0	4,3	NA	NA	NA	NA	0,15	0,6
Canola	0	**4,2**	**Chi-squared test**	**0,03**	**0,36**	**No**	0,15	0,7
Carrot	0	8,0	NA	NA	NA	NA	0,47	1,5
Carrot	0	**8,2**	**Chi-squared test**	**- 0,01**	**0,62**	**No**	0,27	1,6
Sunflower	0	4,5	NA	NA	NA	NA	0,05	0,5
Sunflower	0	**4,6**	**Chi-squared test**	**- 0,03**	**0,69**	**No**	0,10	0,3
Barley	0	20,0	NA	NA	NA	NA	0,00	0,0
Barley	0	**19,8**	**Chi-squared test**	**0,01**	**0,50**	**No**	0,00	0,2
Pea	0	4,5	NA	NA	NA	NA	0,07	0,4
Pea	0	**4,6**	**Chi-squared test**	**- 0,01**	**0,50**	**No**	0,00	0,4
Potato	0	0,8	NA	NA	NA	NA	0,17	0,0
Potato	0	**1,0**	**Chi-squared test**	**- 0,17**	**0,96**	**No**	0,00	0,0
Wheat	0	18,8	NA	NA	NA	NA	0,40	0,8
Wheat	0	**18,6**	**Chi-squared test**	**0,01**	**0,50**	**No**	0,20	1,2
Broad bean	0	2,0	NA	NA	NA	NA	1,40	1,6
Broad bean	0	**2,7**	**Chi-squared test**	**- 0,13**	**0,93**	**No**	0,87	1,5
Maize	0	4,4	NA	NA	NA	NA	0,00	0,6
Maize	0	**3,6**	**Chi-squared test**	**0,16**	**0,14**	**No**	0,20	1,2

Untreated
BAS 762 02 F

Table 3.5-3: Cultivation of different crops in BAS 762 02 F-treated and untreated substrate: Fresh matter weight, 10 – 22 days after sowing/planting

Crop	Average	Test system	Difference	P.value	Significant
	fresh matter weight, in g		(Untreated – Treated)		
Sugar beet	4,48	NA	NA	NA	NA
Sugar beet	**4,42**	**Paired t-test**	**0,05**	**0,44**	**No**
Canola	5,02	NA	NA	NA	NA
Canola	**5,27**	**Paired t-test**	**- 0,24**	**0,87**	**No**
Carrot	1,79	NA	NA	NA	NA
Carrot	**1,96**	**Paired t-test**	**- 0,17**	**0,97**	**No**
Sunflower	6,10	NA	NA	NA	NA
Sunflower	**6,71**	**Paired t-test**	**- 0,61**	**0,96**	**No**
Barley	6,56	NA	NA	NA	NA
Barley	**7,27**	**Paired t-test**	**- 0,70**	**0,99**	**No**
Pea	2,78	NA	NA	NA	NA
Pea	**2,96**	**Paired t-test**	**- 0,26**	**0,95**	**No**
Potato	6,13	NA	NA	NA	NA
Potato	**7,25**	**Paired t-test**	**- 1,11**	**0,97**	**No**
Wheat	4,66	NA	NA	NA	NA
Wheat	**4,79**	**Paired t-test**	**- 0,13**	**0,63**	**No**
Broad bean	4,38	NA	NA	NA	NA
Broad bean	**6,14**	**Paired t-test**	**- 1,75**	**0,95**	**No**
Maize	5,05	NA	NA	NA	NA
Maize	**5,17**	**Paired t-test**	**- 0,12**	**0,59**	**No**

Untreated
BAS 762 02 F

Table 3.5-4: Cultivation of different crops in BAS 762 02 F-treated and untreated substrate: Plant height (monocots), 10 – 22 days after sowing/planting

Crop	Average height, in cm	Test system	Difference	P.value	Significant
Barley	18,6	NA	NA	NA	NA
Barley	**19,2**	**Paired t-test**	**- 0,6**	**0,81**	**No**
Wheat	18,5	NA	NA	NA	NA
Wheat	**18,7**	**Paired t-test**	**- 0,2**	**0,59**	**No**
Maize	21,8	NA	NA	NA	NA
Maize	**23,4**	**Paired t-test**	**- 1,6**	**0,93**	**No**

Untreated
BAS 762 02 F

Summary and conclusion

As a conclusion of all studies conducted, BAS 762 02 F does not have any negative impact on the cultivation of the tested succeeding crops.

No signs have been found in any glasshouse trials that BAS 762 02 F had negative effects on following crops. This indicates that the product BAS 762 02 F presents an extremely small risk of damage to any following crop. It may therefore be concluded that there are no grounds for expecting a risk of damage to following crops due to application of BAS 762 02 F. There is **no necessity for restrictions in the choice of following crops**, even in the event of crop failure on a field which has been treated with BAS 762 02 F.

Comments of zRMS on:
Impact on succeeding crops (3.5.1)

The applicant has submitted succeeding crop study, carried out in 2019 under glasshouse conditions to evaluate the effect of BAS 762 02 F on ten succeeding crops: sugar beet, oilseed rape, carrot, sunflower, winter barley, pea, potato, winter barley, broad bean and maize. BAS 762 02 F at double recommended dose rate of 2,0 L/ha was incorporated into the soil before cultivation of tested crops. No phytotoxicity and no adverse effect on germination, plant weight and plant height has been observed. Result from this trial indicate that no negative impact on following crops is to be expected after application of BAS 762 02 F at dose rate of 1 L/ha.

3.5.2 Impact on other plants including adjacent crops (KCP 6.5.2)

PP 1/256(1) suggests that data can usually be taken from the non-target plant testing. Therefore, reference is made to Part B Section 09 Appendix 02.06 (KCP 10.6).

Material and Methods

In a vegetative vigor test, six species of dicotyledonous plants (carrot, lettuce, oilseed rape, cabbage, soya bean, tomato) and four species of monocotyledonous plants (onion, rye grass, wheat, corn) were exposed to BAS 762 02 F to evaluate the phytotoxic potential. BAS 762 02 F was applied post-emergence at growth stage BBCH 12 – 14 at 1 L/ha. Per plant species one control (tap water only) was tested. After application, the plants were cultivated for 21 days under greenhouse conditions. Assessments for phytotoxicity and plant survival were done 7, 14 and 21 days after treatment (DAT); assessment for single plant length was done 21 days after application; plant dry weight was determined at study termination 21 DAT.

Results

Results are presented below in Table 3.5-5, Table 3.5-6 and Table 3.5-7.

After post-emergence application it can be concluded that BAS 762 02 F at 1 L/ha did not cause effects to plant phytotoxicity, plant survival, plant length and plant dry biomass for all tested plant species.

Table 3.5-5: Effect of BAS 762 02 F on plant survival (% to untreated control) - 21 DAT

Plant species	Rate BAS 762 02 F [L/ha]	Number of living plants per replicate			Plant survival 21 DAT [%]
		7 DAT	14 DAT	21 DAT	
Carrot	0.0	6.0	6.0	6.0	100
	1.0	6.0	6.0	6.0	100
Lettuce	0.0	6.0	6.0	6.0	100
	1.0	6.0	6.0	6.0	100
Cabbage	0.0	6.0	6.0	6.0	100
	1.0	6.0	6.0	6.0	100
Oilseed rape	0.0	6.0	6.0	6.0	100
	1.0	6.0	6.0	6.0	100
Tomato	0.0	6.0	6.0	6.0	100
	1.0	6.0	6.0	6.0	100
Soybean	0.0	6.0	6.0	6.0	100
	1.0	6.0	6.0	6.0	100
Onion	0.0	6.0	6.0	6.0	100
	1.0	6.0	6.0	6.0	100
Ryegrass	0.0	6.0	6.0	6.0	100
	1.0	6.0	6.0	6.0	100
Wheat	0.0	6.0	6.0	6.0	100
	1.0	6.0	6.0	6.0	100
Corn	0.0	6.0	6.0	6.0	100
	1.0	6.0	6.0	6.0	100

Treatment not significantly different to control

Table 3.5-6: Effect of BAS 762 02 F on plant length and biomass (% to untreated control) - 21 DAT

Plant species	Plant length Rate - BAS 762 02 F [L/ha]		Biomass (dry) Rate - BAS 762 02 F [L/ha]	
	0.0	1.0	0.0	1.0
Carrot	100.0	99.1	100.0	94.4
Lettuce	100.0	101.6	100.0	101.5
Cabbage	100.0	100.4	100.0	101.4
Oilseed rape	100.0	100.3	100.0	105.3
Tomato	100.0	101.9	100.0	102.7
Soybean	100.0	100.8	100.0	103.5
Onion	100.0	101.4	100.0	103.0
Ryegrass	100.0	103.3	100.0	104.0
Wheat	100.0	96.7	100.0	98.5
Corn	100.0	101.3	100.0	106.7

Treatment not significantly different to control

Table 3.5-7: No observed effects rates (NOER) and ER50 for plant survival, phytotoxicity, plant length and biomass reduction after application of BAS 762 02 F at BBCH stage 12-14

Plant species	Plant survival		Phytotoxicity*		Plant length		Biomass	
	NOER	ER_{50}	NOER	ER_{50}	NOER	ER_{50}	NOER	ER_{50}
Carrot	≥ 1.0	> 1.0	≥ 1.0	> 1.0	≥ 1.0	> 1.0	≥ 1.0	> 1.0
Lettuce	≥ 1.0	> 1.0	≥ 1.0	> 1.0	≥ 1.0	> 1.0	≥ 1.0	> 1.0
Cabbage	≥ 1.0	> 1.0	≥ 1.0	> 1.0	≥ 1.0	> 1.0	≥ 1.0	> 1.0
Oilseed rape	≥ 1.0	> 1.0	≥ 1.0	> 1.0	≥ 1.0	> 1.0	≥ 1.0	> 1.0
Tomato	≥ 1.0	> 1.0	≥ 1.0	> 1.0	≥ 1.0	> 1.0	≥ 1.0	> 1.0
Soybean	≥ 1.0	> 1.0	≥ 1.0	> 1.0	≥ 1.0	> 1.0	≥ 1.0	> 1.0
Onion	≥ 1.0	> 1.0	≥ 1.0	> 1.0	≥ 1.0	> 1.0	≥ 1.0	> 1.0
Ryegrass	≥ 1.0	> 1.0	≥ 1.0	> 1.0	≥ 1.0	> 1.0	≥ 1.0	> 1.0
Wheat	≥ 1.0	> 1.0	≥ 1.0	> 1.0	≥ 1.0	> 1.0	≥ 1.0	> 1.0
Corn	≥ 1.0	> 1.0	≥ 1.0	> 1.0	≥ 1.0	> 1.0	≥ 1.0	> 1.0

* estimated from assessment data

Summary and conclusion

Post-emergence application of BAS 762 02 F under worst-case greenhouse conditions did not result in any treatment-related symptom of phytotoxicity for all tested species. The ER_{50} based on phytotoxicity, plant dry weight and height was > 1,0 L BAS 762 02 F/ha for all tested plant species (the highest rate tested). The NOER based on phytotoxicity for wheat was ≥ 1 L/ha.

The data presented within this Annex Point justifies the recommendation of **no restrictions on adjacent crops** after the application of BAS 762 02 F.

Comments of zRMS on:
Impact on other plants including adjacent crops (3.5.2)

The effect of BAS 762 02 of vegetative vigour of six species of dicotyledonous plants (carrot, lettuce, cabbage, oilseed rape, tomato, soybean) and four species of monocotyledonous plants (onion, ryegrass, wheat, corn) was tested in greenhouse study conducted in Germany in 2019. BAS 762 02 F at dose rate of 1 L/ha was applied post-emergence at BBCH 12-14. Assessments for plant damage and plant survival were done 7,14 and 21 days after treatment. No phytotoxicity and no plant mortality was observed for all tested plant species after application of BAS 762 02 F. Additionally the tested fungicide did not cause adverse effects to plant length and plant dry biomass for all ten plants. Based on the submitted trial results it can be concluded that the adverse effect on adjacent crops is not to be expected after application under field conditions. Being in be in line with the rules of good agricultural practice it would be beneficial to include, in the product label, the following remark: "*When using BAS 517 01 F do not allow spray drift to the neighbouring crop plantations*", in order to avoid the risk of adverse effects on adjacent crops.

3.5.3 Effects on beneficial and other non-target organisms (KCP 6.5.3)

Detailed studies on the possible adverse effects to beneficial organisms are submitted and summarised in Part B, Section 9 (Ecotoxicology).

3.6 Other/special studies

3.6.1 Tank cleaning (KCP 6.6)

A study was conducted to demonstrate that residues of the plant protection product BAS 762 02 F potentially presenting a risk to the operator or crops do not remain in the spray tank after cleaning.

The full report "Effectiveness of Procedures for Cleaning Application Equipment and Protective Clothing BAS 762 02 F" ~~has been submitted in the Biological Assessment Dossier.~~ is available under the DocID 2019/2044222.

The risk assessment was carried out based on a model calculation. A "Double rinse Procedure" was supposed for the calculation. The amount of water considered for each cleaning cycle was 10% of the tank volume.

The result of the calculation, based on the recommendation for the use of the formulation, the parameter of the supposed cleaning procedure and application equipment, was within the expected range. Even if a small amount of the active ingredients Boscalid and Mefentrifluconazol remain in the spray tank, a risk from this low concentration can be excluded. A more complex cleaning procedure is not necessary, water is sufficient for cleaning sprayers to prevent damage to plants.

Comments of zRMS on:
Tank cleaning (3.6.1)

Based on the submitted trial data, it can be concluded that double rinse procedure with water, without any cleaning agents is sufficient to remove active substances residues after application of BAS 762 02 F to the safe level, to avoid potential risk of damage for the plants during a subsequent application. Cleaning of application equipment should be done direct after use, according to the common agricultural practice.

3.6.2 Physical and chemical compatibility (KCP 6.6)

Data on the physical tank mix compatibility have been generated for an aqueous mixture of BAS 762 02 F with other plant protection products. The ASTM Method: E 1518-05 was followed.

The full report "Physical and Chemical Compatibility in Aqueous Tank Mixtures of BAS 762 02 F~~" has been submitted in the Biological Assessment Dossier "~~ is available under the DocID 2019/2037577.

In total 6 mixtures of BAS 762 02 F with other plant protection products were tested. One static test and one dynamic test / shear test were performed. The tank mix partners tested and the results of the tests are presented in

Table 3.6-1.

Table 3.6-1: Tested tank mix partners and results of the compatibility tests

Mixture No.	BAS number	Tradename	Concentration of active substances	Formulation type	Dose rate tested per ha	Mixing order	Test result
1	BAS 762 02 F	none	200 g/L Boscalid +100 g/L Mefentrifluconazole	SC	1,00 L/ha	1	Compatible using agitator, shear test done, foaming possible
	BAS 516 15 F	Pictor Active	150 g/L Boscalid + 250 g/L Pyraclostrobin	SC	1,00 L/ha	2	
2	BAS 762 02 F	none	200 g/L Boscalid +100 g/L Mefentrifluconazole	SC	1,00 L/ha	1	Compatible using agitator, shear test done, foaming possible
	BAS 9165 1 I	Biscaya	240 g/L Thiacloprid	OD	0,3 L/ha	2	
3	BAS 762 02 F	none	200 g/L Boscalid +100 g/L Mefentrifluconazole	SC	1,00 L/ha	2	Compatible using agitator, shear test done, foaming possible
	BAS 9111 9 I	Mospilan	20 % Acetamiprid	SG	0,12 kg/ha	1	
4	BAS 762 02 F	none	200 g/L Boscalid +100 g/L Mefentrifluconazole	SC	1,00 L/ha	1	Compatible using agitator, shear test done
	BAS 9157 5 I	Avatar	150 g/L Indoxacarb	EC	0,17 L/ha	2	
5	BAS 762 02 F	none	200 g/L Boscalid +100 g/L Mefentrifluconazole	SC	1,00 L/ha	1	Compatible using agitator, shear test done, foaming possible
	BAS 9038 1 I	Mavrik Flo	240 g/L Fluvalinate	EW	0,20 L/ha	2	
6	BAS 762 02 F	none	200 g/L Boscalid +100 g/L Mefentrifluconazole	SC	1,00 L/ha	1	Compatible using agitator, shear test done
	BAS 160 00 S	Dash EC	none (100 % adjuvant system)	EC	1,00 L/ha	2	

Test conditions and estimation of the results followed practical requests and commercial technical standards of modern spray equipment.

It is assumed that modern commercially used field sprayers are equipped with a continuous pumping system as well as with an agitation system. Recommendations in the table, concerning the use of an agitator, only apply to sprayers which do not have a standard agitation system, in order to ensure homogeneity of the spray broth also for longer standing times.

In some cases, results contain statements about foaming of a tank mix. The statement ‘foaming possible’ gives an indication that foam formation may occur in specific processes like preparation of the spray broth. In general, this foaming doesn’t cause any problem at the application.

Discussion and conclusion

All mixtures were determined to be physically compatible and can be used in spray applications. In all mixtures no lumping and no flocculation occurred. The mixtures appeared to be homogeneous.

Therefore BAS 762 02 F is apparently physically compatible with the tested products.

Boscalid and Mefentrifluconazole, the active substances of BAS 762 02 F, are stable in diluted aqueous conditions. Therefore, none of the functional groups are likely to react under normal tank mix conditions.

Pictor Active, Biscaya, Mospilan SG, Avatar, Mavrik Flo and Dash EC are approved commercial products for applications in various tank mixtures as they are sufficiently stable in aqueous conditions. No indication of any chemical reaction between the mixed products was observed.

Therefore BAS 762 02 F is apparently chemically compatible with the tested products.

Comments of zRMS on:
Physical and chemical compatibility (3.6.2)

Trial "Physical and Chemical Compatibility in Aqueous Tank Mixtures of BAS 762 02 F" (DocID 2019/2037577) provide additional, valuable data, which point at physical and chemical compatibility of BAS 762 02 F used in mixtures with: Pictor Active (150 g/l boscalid + 250 g/l pyraclostrobin), Biscaya (240 g/l thiacloprid), Mospilan SG (20% acetamiprid), Avatar (150 g/l indoxacarb), Mavrik Flo (240 g/l fluvalinate), Dash EC (adjuvant). According to the table of intended uses (table 3.1-1), the use of BAS 762 02 F with other plant protection products in not a subject of the submitted application.

3.6.3 Water volume testing (KCP 6.6)

A wide range of different water volumes at application have been tested within the efficacy trials presented in this BAD. In addition, 3 specific trials were conducted in oilseed rape in order to confirm the performance of BAS 762 02 F applied with 3 different water volumes – 100, 200 and 400 L/ha – in orthogonal comparisons.

Introduction

BAS 762 02 F is the mixture of mefentrifluconazole (100 gai/L) and boscalid (200 gai/L). The maximum to be registered dose rate is 1 L/ha in all countries.

BAS 762 02 F is intended for use in oilseed rape, sunflower and wheat against pathogens such as *Sclerotinia sclerotiorum*, *Alternaria* species, *Alternaria helianthi*, *Diaporthe helianthi*, *Phoma macdonaldii*, *Zymoseptoria tritici* and *Oculimacula* species. The product shall be applied once in oilseed rape and wheat and two times during the vegetation period in sunflower.

The water volume is 100-400 L/ha in oilseed rape and sunflower and 100-300 L/ha in wheat.

Efficacy at different water volumes

To prove that BAS 762 02 F is working in the given range of water volumes for oilseed rape three trials were conducted in France and Germany in 2020. The trials were 4 times replicated and fully randomized. BAS 762 02 F was applied at 1 L/ha during flowering time, targeting *Sclerotinia sclerotiorum*. The disease was assessed visually by estimating the frequency and intensity of attack on the stem. The final assessment at BBCH 85 was chosen for the summary, so data 63 – 70 days after the treatment are considered.

The tested water volumes were 100 L/ha, 200 L/ha and 400 L/ha. In comparison a standard (Propulse) at 1 L/ha was tested as well.

The details of the products applied is given below in Table 3.6-2

Table 3.6-2: Products and water volumes used to evaluate the efficacy of BAS 762 02 F at different water volumes

Product	Active ingredients	Formulation	Dose rate		Water volume
Untreated	-	-	-	-	-
BAS 762 02 F	Mefentriluconazole + Boscalid	SC	1 L/ha	100 gai/ha + 200 gai/ha	100 L/HA
Propulse (BAS 9488 0 F)	Prothioconazole + Fluopyram	EC	1 L/ha	125 gai/ha + 125 gai/ha	
BAS 762 02 F	Mefentriluconazole + Boscalid	SC	1 L/ha	100 gai/ha + 200 gai/ha	200 L/HA
Propulse (BAS 9488 0 F)	Prothioconazole + Fluopyram	EC	1 L/ha	125 gai/ha + 125 gai/ha	
BAS 762 02 F	Mefentriluconazole	SC	1 L/ha	100 gai/ha	400 L/HA

	+ Boscalid			+ 200 gai/ha	
Propulse (BAS 9488 0 F)	Prothioconazole + Fluopyram	EC	1 L/ha	125 gai/ha + 125 gai/ha	

The summary of the three trials is shown in **Table 3.6-3**.

Table 3.6-3: Summary of results for different water volumes

EPPO Zone climatic		Timing of assessm, DAT	UTC infect	Water wolume 100 Lha				Water wolume 200 Lha				Water wolume 400 Lha			
				BAS 762 02 F 1 L/ha		BAS 9488 0 F 1 L/ha		BAS 762 02 F 1 L/ha		BAS 9488 0 F 1 L/ha		BAS 762 02 F 1 L/ha		BAS 9488 0 F 1 L/ha	
				infect	efficacy	infect	efficacy	infect	efficacy	infect	efficacy	infect	efficacy	infect	efficacy
Total	**n=3**	mean	**42**	16	**67**	15	**69**	12	**73**	18	**61**	13	**75**	19	**64**
		min	**7,2**	1,9	56	1,3	61	1,7	68	1,9	53	1,2	62	1,1	50
		max	77	34	74	29,9	82	24,9	77	33,1	73	29,4	83	33,7	85

The results ~~proof~~ prove that the efficacy of BAS 762 02 F stays on a similar level independently from the water volume the product is applied with. In case when BAS 762 02 F is applied at 100 L/ha water an efficacy of 67 % against *Sclerotinia sclerotiorum* could be achieved. If the product is applied with higher water volumes the efficacy increases slightly to 73% at 200 L/ha and 75% at 400 L/ha. This shows a tendency to increased efficacy with higher water volumes. Nevertheless, even at the lowest water volume given in the GAP a very good efficacy can be achieved. A slightly different trend was observed for the standard Propulse applied at 1 L/ha. Here the efficacy was slightly lower when the water volume was increased.

Conclusion

The efficacy of BAS 762 02 F is very similar at the different water volumes requested in the GAP. Even though a trend to higher efficacy at higher water volumes was observed there is no evidence that the efficacy is insufficient at the lower end of water volumes (100 L/ha).

Comments of zRMS on:
Water volume testing (3.6.3)

Based on the submitted trial results it can be concluded that the level of efficacy of BAS 762 02 F in the control of *Sclerotinia sclerotiorum* in oilseed rape is similar, independently from the water volume applied. However a slight increase of efficacy is observed with higher water volumes.

3.6.4 RegPest Model (KCP 6.6)

For some uses ~~defended~~ aimed in this ~~BAD~~ dRR, the number of trials available per climatic zone according to guidance given by EPPO PP 1/241 may be insufficient. Therefore, in some cases trials have been extrapolated between the zones. The key factor of extrapolation was indication from model called RegPest.

A detailed study using RegPest was done in the Biological assessment dossier in order to prove comparability of data conducted in different regions outside the South-east climatic EPPO zone.

RegPest model was created by Institute of Soil Science and Plant Cultivation – State Research Institute Pulawy in Poland. It enables a detailed comparison of the climatic and soil conditions and of the structure

of crops within Europe. The application does not perform divisions into fixed areas; instead, it dynamically determines differences between 2 selected regions on the level of NUTS 2[1].

The analysis is based on 13 indicators that potentially have impact on pesticides behaviour. These indicators are listed in Table 3.6-4. The model analyses each indicator and generates maps showing the differences and the similarities between the selected regions and the rest of the Europe. As an output a percentage similarity between the selected two regions is calculated. Two version are provided: version A where the weight of each indicator is assigned by the experts and version B where the effective weights used. The effective weights take into account correlations between individual factors.

A detailed explanation of RegPest model has been submitted in the Biological Assessment Dossier.

Table 3.6-4: Indicators used in RegPest

No	Indicator
1	Mean temperature in the growing season [°C]
2	Mean temperature outside the growing season [°C]
3	Length of the growing season [days with temperature >5° C)
4	Insolation in the growing season [W/m2]
5	Precipitation in the growing season [mm/day]
6	Frequency of precipitation over 40mm/day in the growing season [%]
7	Air humidity in the growing season [%]
8	Soil texture expressed by the proportion of sand fraction in the soil layer of up to 30 cm deep [%]
9	Organic carbon content in the soil layer of up to 30 cm deep [%]
10	Soil reaction in the layer of up to 30 cm deep [pH in w H2O]
11	Soil moisture from the water balance model in the growing season [%]
12	Crop diversification measured by the proportion of cereal crops in the arable land area [%]
13	Proportion of permanent crops in the agricultural land area [%]

The RegPest analysis was used to support available data in wheat, namely on *Zymoseptoria tritici* in the North east EPPO zone and *Blumeria graminis* in both the Maritime and the North east EPPO zones. See the overview in Table 3.6-5.

Table 3.6-5: Overview of proposed extrapolations between the zones in cereals

Extrapolation		Crop	Disease
from (region with data)	**to**		
Maritime EPPO zone	**North-East EPPO zone**		
Czech Republic	Poland	Wheat	SEPTTR
Germany			
North-East EPPO zone	**Maritime EPPO zone**		
Poland	Austria	Wheat	SEPTTR, ERYSGR
	Czech Republic		
	Germany		

In the analysis, the conditions (13 indicators) of the available trials from which the extrapolation is requested were compared to representative regions of the concerned member states in the EPPO zone to which the extrapolation is done. From each concerned member state, the regions where cereal production is concentrated were selected for analysis. The extrapolation was done between the neighbouring countries. The only exception was extrapolation from Poland to Austria which is still considered acceptable due to relatively low distance between the northern border of Austria and the Czech Republic and the fact that the

[1] The nomenclature of territorial units for statistics (Nomenclature des Unités territoriales statistiques – NUTS) is a geographical system, according to which the territory of the European Union is divided into hierarchical levels. The four hierarchical levels are known as NUTS-0, NUTS-1, NUTS-2 and NUTS-3. This classification enables cross-border statistical comparisons at various regional levels within the EU.
(from https://www.destatis.de/Europa/EN/Methods/Classifications/OverviewClassification_NUTS.html)

representative regions of Austria and the Czech Republic - Niederösterreich and South-east - are direct neighbours.

The only member state within the North east EPPO zone is Poland. Based on information of the Polish Statistical Office, the regions Lubelskie and Dolnoslaskie were selected for the analysis as the areas with the highest area of wheat.

Concerning the extrapolation from Polish trials to the Maritime zone, representative regions of Austria, the Czech Republic and Germany were chosen based on information from Eurostat.

In Austria, the vast majority of wheat (and also cereals in general) is grown in the region Niederösterreich. In the Czech Republic, South-east Bohemia and Middle Bohemia are the regions of the highest wheat area. In Germany, the information on level of NUTS2 was not available, the statistics were collected from larger subregions which in majority of cases cover more NUTS2. One of exceptions where the statistical region corresponds with NUTS2 and includes large wheat areas is the region Sachsen-Anhalt. In addition to it, the region Lüneburg which covers large part of Niedersachsen was chosen as the second representative of Germany.

Detailed report for all individual comparison ~~has been submitted in the Biological Assessment Dossier~~ is available under the DocID 2020_2109359. Overview of similarities calculated for the particular trials is given in Table 3.6-6 and

Table 3.6-7.

Table 3.6-6: Extrapolations from Maritime to North east EPPO, similarities in %

Regions of Maritime EPPO from which data is extrapolated to NE EPPO (NUTS)	Disease	Representative region of Poland (NE EPPO)			
		Lubelskie		Dolnoslaskie	
		A	B	A	B
DE80: Mecklenburg-Vorpommern (Germany)	SEPTTR	83,43	82,54	88,77	88,21
DEE0: Sachsen-Anhalt (Germany)	SEPTTR	81,22	80,39	86,44	85,49
CZ06: Jihovychod (Czech Republic)	SEPTTR, ERYSGR	82,36	80,92	88,25	87,06
CZ07: Stredni Morava (Czech Republic)	SEPTTR	75,6	74,21	82,18	81,28
DEB3: Rheinhessen-Pfalz (Germany)	SEPTTR	79,89	79,39	85,63	85,05

A = expert weight, B = effective weight

Table 3.6-7: Extrapolations from North east to Maritime EPPO, similarities in %

Regions of NE EPPO (Poland) from which data is extrapolated to MA EPPO (NUTS)	Disease	Representative region of MA EPPO									
		Germany				Austria		Czech Republic			
		vs Sachsen-Anhalt		vs Lüneburg		vs Nieder-österreich		vs Stredni Cechy		vs Jihovychod	
		A	B	A	B	A	B	A	B	A	B
PL51: Dolnoslaskie	ERYSGR	86,44	85,49	83,02	84,24	84,66	84,85	84,73	83,59	88,25	87,06
PL22: Slaskie	ERYSGR	75,93	74,17	80,22	80,66	75,2	74,87	74,72	73,14	78,2	76,53
PL11: Lodzkie	ERYSGR	74,45	73,52	77,51	77,45	71,19	70,87	70,82	69,55	74,8	73,48
PL22: Slaskie	ERYSGR	75,93	74,17	80,22	80,66	75,2	74,87	74,72	73,14	78,2	76,53
PL51: Dolnoslaskie	ERYSGR	86,44	85,49	83,02	84,24	84,66	84,85	84,73	83,59	88,25	87,06
PL41: Wielkopolskie	ERYSGR	78,82	78,13	79,88	80,7	74,88	74,61	74,59	73,6	78,49	77,5
PL52: Opolskie	ERYSGR	82,91	81,39	82,55	82,77	81,15	80,95	80,87	79,3	84,4	82,77

A = expert weight, B = effective weight

Legend for colours used to differentiate the levels of similarity has been taken over from the RegPest model and is shown on the following picture.

Range	Description
0 - 12.5	negligible
12.5 - 25	very low
25 - 37.5	low
37.5 - 50	moderately low
50 - 62.5	moderate
62.5 - 75	moderately high
75 - 87.5	high
87.5 - 100	very high

Comments of zRMS on:
RegPest Model (3.6.4)

The comparison between the trial locations in the Maritime zone, and the North-East EPPO zone, concerning climate, soil properties and crop structure shows similarity of at least 69,55% up to a maximum of 88,77%. Therefore it can be concluded that results from these trials may support efficacy data between Maritime and North-East EPPO zone (concerns efficacy data on *Zymoseptoria tritici* and *Blumeria graminis* on wheat in North-East /Maritime EPPO zones).

3.7. List of test facilities including the corresponding certificates

List of all test facilities is provided in table below. The corresponding certificates have been submitted in the Biological Assessment Dossier.

Table 3.6-8: List of test facilities

Test facility	Country	GEP certificate (Yes or No)
Eurofins EOOD	Bulgaria	Yes
Zkusebni stanice Nechanice	Czech Republic	Yes
OSEVA PRO Ltd., VUO Opava	Czech Republic	Yes
ZZS Kujavy s. r. o.	Czech Republic	Yes
Zkusebni stanice Kluky	Czech Republic	Yes
Krasne Udoli	Czech Republic	Yes
Zkusebni stanice Trutnov	Czech Republic	Yes
Agricultural research institute	Czech Republic	Yes
ADW AGRO, a.s.	Czech Republic	Yes
InTec Agro Trials, s.r.o.	Czech Republic	Yes
Zemedelsky vyzkumny ustav	Czech Republic	Yes
AU-Flakkebjerg	Denmark	Yes
VKST Field Trials	Denmark	Yes
Agrolab A/S	Denmark	Yes
Syntech Research France	France	Yes
STAPHYT	France	Yes
ANTEDIS	France	Yes
BASF Agro SAS	France	Yes
EAS France	France	Yes
~~SYNTECH RESEARCH FRANCE~~	~~France~~	~~Yes~~
AGROLIS CONSULTING	France	Yes
CENTREXPE	France	Yes
RESEAU ASTRIA	France	Yes
BASF SE	Germany	Yes
Hetterich Fieldwork GbR	Germany	Yes

Test facility	Country	GEP certificate (Yes or No)
STAPHYT	Germany	Yes
APR Limburgerhof VTF	Germany	Yes
BASF Hungária Kft.	Hungary	Yes
SynTech Research Hungary	Hungary	Yes
Agrofil-Szmi Kft	Hungary	Yes
SGS Hungária KFT	Hungary	Yes
Sia Agrolab Baltic	Latvia	Yes
LPPRC	Latvia	Yes
Institute of Agriculture	Lithuania	Yes
UTP w Bydgoszczy	Poland	Yes
IPP-NRI Sosnicowice	Poland	Yes
STAPHYT	Poland	Yes
BASF Polska Sp. z o.o.	Poland	Yes
IOR- PIB POZNAŃ	Poland	Yes
SGS POLSKA SP. Z O.O.	Poland	Yes
Biotek Agriculture Polska	Poland	Yes
Agreco Sp. z o.o.	Poland	Yes
Eurofins Agroscience Serv	Poland	Yes
~~IOR- PIB POZNAŃ~~	~~Poland~~	~~Yes~~
Eurofins Agroscience Serv	Romania	Yes
BASF	Romania	Yes
Fyse, s.r.o. Dep. AgroLab	Slovakia	Yes
Gemerprodukt Valice OVD	Slovakia	Yes
UKSUP	Slovakia	Yes
BERBERIS s.r.o.	Slovakia	Yes
NPPC, VURV Piestany, VSS	Slovakia	Yes
HS Skåne HUSEC	Sweden	Yes
Agrolab Sverige AB	Sweden	Yes
BASF plc	United Kingdom	Yes
ADAS	United Kingdom	Yes

Appendix 1 Lists of data considered in support of the evaluation

List of data submitted by the applicant and relied on

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner
KCP 6/1	XXX, D.	2021	Biological Assessment Dossier - BAS 762 02 F – Central Zone – zRMS: Poland 2020/2109659 BASF spol. S.r.o; Pargue; Czech Republic no Unpublished	No	BASF
KCP 6.1/1	XXX, M.	2020	Justification of the co-formulated mixture BAS 762 02 F for oilseed rape, sunflower and cereals 2020/2106608 BASF SE, Limburgerhof, Germany Fed.Rep. yes Unpublished	No	BASF
KCP 6.2/1	Anonymous	2020	Dossier Trial Data Reports: BAS 762 02 F - Efficacy trials in oilseed rape (162 trials) 2020/2109355 <none> yes Unpublished	No	BASF
KCP 6.2/2	Anonymous	2020	Dossier Trial Data Reports: BAS 762 02 F - Efficacy trials in sunflower (84 trials) 2020/2109356 <none> yes Unpublished	No	BASF
KCP 6.2/3	Anonymous	2020	Dossier Trial Data Reports: BAS 762 02 F - Efficacy trials in wheat (25 trials) 2020/2109357 <none> yes Unpublished	No	BASF

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 6.2/4	Anonymous	2021	Additional trial reports (13 trials) 2021/2029135 <none> yes Unpublished	No	BASF
KCP 6.3/1	XXX, G.	2020	BAS 762 02 F - Resistance Risk Analysis 2020/2082886 BASF SE, Limburgerhof, Germany Fed.Rep. yes Unpublished	No	BASF
KCP 6.4.4/1	XXX, A., Schuster, A.	2020	Germination trials with harvested grains from wheat treated with BAS 762 00 F 2020/2006395 BASF SE, Limburgerhof, Germany Fed.Rep. yes Unpublished	No	BASF
KCP 6.5.1/1	XXX, L.	2019	Cultivation of different crops in substrate treated with BAS 762 02 F (Succeeding crops study) 2019/1028202 BASF SE, Limburgerhof, Germany Fed.Rep. no Unpublished	No	BASF
KCP 6.5.2/1	XXX, A.	2020	Effect of BAS 762 02 F on vegetative vigour of ten species of terrestrial plants under greenhouse conditions 2020/1000745 Agro-Check Dr. Teresiak & Erdmann GbR, Lentzke, Germany Fed.Rep. yes Unpublished	No	BASF
KCP 6.6/1	XXX, C.	2019	Effectiveness of procedures for cleaning application equipment and protective clothing BAS 762 02 F 2019/2044222 BASF SE, Limburgerhof, Germany Fed.Rep. no Unpublished	No	BASF

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 6.6/2	XXX, C.	2019	Physical and Chemical Compatibility in Aqueous Tank Mixtures of BAS 762 02 F 2019/2037577 BASF SE, Limburgerhof, Germany Fed.Rep. no Unpublished	No	BASF
KCP 6.6/3	Anonymous	2020	Dossier Trial Data Reports: BAS 762 02 F - Water volume testing in oilseed rape (3 trials) 2020/2109358 <none> yes Unpublished	No	BASF
KCP 6.6/4	Anonymous	2020	BAS 762 02 F: Summary report on comparison of regions 2020/2109359 <none> no Unpublished	No	BASF
KCP 6.6/5	Anonymous	2015	GEP Certicate: Eurofins Agroscience Services EOOD, Letnitsa, Bulgaria - 2015 2015/1143221 Eurofins Agroscience Services EOOD, Letnitsa, Bulgaria no Unpublished	No	BASF
KCP 6.6/6	XXX, P.	2009	GEP Certificate: Zkusebni stanice Nechanice, s.r.o., Nechanice, Czech Rebublic 2009/1127609 Zkusebni stanice Nechanice s.r.o., Nechanice, Czech Republic no Unpublished	No	BASF
KCP 6.6/7	Anonymous	2016	GEP Certificate: Oseva Pro s.r.o., odstepny zavod Vyzkumny ustav olejnin Opava, Czech Republic 2016/1274861 OSEVA Pro s.r.o., Opava, Czech Republic no Unpublished	No	BASF

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 6.6/8	XXX, P.	2016	GEP Certificate: Zemedelska Zkusebni Stanice Kujavy s.r.o., Kujavy Czech Republic - 2016 2016/1350608 Zemedelska Zkusebni Stanice Kujavy s.r.o., Kujavy, Czech Republic no Unpublished	No	BASF
KCP 6.6/9	XXX, P.	2016	GEP Certificate: Zkusebni stanice Kluky, spol. s r.o., Czech Republic - 2016 2016/1350647 Zkusebni stanice Kluky spol. s.r.o., Kluky, Czech Republic no Unpublished	No	BASF
KCP 6.6/10	XXX, P.	2016	GEP Certificate: Ing. Jitka Mareckova, Zkusebni stanice Krasne Udoli Touzim, Czech Republic 2016/1352929 <none> no Unpublished	No	BASF
KCP 6.6/11	XXX, P.	2016	GEP Certificate - Zkusebni Stanice Trutnov s.r.o, Trutnov, Czech Republic - 2017 2017/1156065 ZST - Zkusebni Stanice Trutnov s.r.o, Trutnov, Czech Republic no Unpublished	No	BASF
KCP 6.6/12	XXX, P.	2016	GEP Certificate: Zemedelsky Vyzkumny Ustav Kromeriz s.r.o., Poland 2016 2017/1192567 Zemedelsky Vyzkumny Ustav Kromeriz s.r.o., Kromeriz, Poland no Unpublished	No	BASF
KCP 6.6/13	XXX, P.	2018	GEP Certificate - ADW Agro As Krahulov Czech Republic - 2018 2019/2046744 ADW Agro A.s., Krahulov, Czech Republic no Unpublished	No	BASF

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 6.6/14	XXX, P.	2018	Rozhodnuti InTec Agro Trials spol sro, Uhersky Ostroh, Czech Republic 2019/2055093 InTec Agro Trials spol sro, Uhersky Ostroh, Czech Republic no Unpublished	No	BASF
KCP 6.6/15	XXX, N.	2013	GEP Certificate - Aarhus University (diseases and pests), Slagelse, Denmark 2014-2019 2014/1321454 University of Aarhus, Slagelse, Denmark no Unpublished	No	BASF
KCP 6.6/16	XXX, N.	2013	GEP Certificate - Agronova - Gefion Field trials, Soro, Denmark, 2014 2014/1327452 Agronova - Gefion Field Trials, Soro, Denmark no Unpublished	No	BASF
KCP 6.6/17	Anonymous	2013	GEP Certificate: Agrolab A/S, Field Trials, Middelfart, Denmark, 2014 2014/1327634 Agrolab A/S, Middelfart, Denmark no Unpublished	No	BASF
KCP 6.6/18	XXX, A.	2015	GEP Certificate: SynTech Research France SAS 2015/1093415 SynTech Research, La Chapelle de Guinchay, France no Unpublished	No	BASF
KCP 6.6/19	Anonymous	2016	GEP Certificate - Staphyt, Inchy-en-Artois, France - 2016 2016/1346288 Staphyt Sarl, Inchy en Artois, France no Unpublished	No	BASF

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 6.6/20	Anonymous	2016	GEP Certificate: Antedis, Beauvais France - 2016 2016/1350387 Antedis, Beauvais, France no Unpublished	No	BASF
KCP 6.6/21	XXX, A.	2019	GEP Certificate: Antedis, Beauvais France - 2019-2021 2019/1078913 Antedis, Beauvais, France no Unpublished	No	BASF
KCP 6.6/22	XXX, A.	2017	GEP Certificate - BASF France SAS Ecully France - 2017 2017/1023856 BASF Agro SAS, Ecully, France no Unpublished	No	BASF
KCP 6.6/23	XXX, A.	2019	GEP Certificate: BASF France SAS, Ecully, France, 2019 2019/1054949 BASF France SAS, Ecully, France no Unpublished	No	BASF
KCP 6.6/24	XXX, A.	2017	GEP Certificate: Eurofins Agrosciences Services - France - 2017-2019 2017/1140795 Eurofins Agroscience Services France (Alsace), Saint Pierre, France no Unpublished	No	BASF
KCP 6.6/25	XXX, A.	2019	GEP Certificate - Eurofins Agro Sciences France, FR valid from 24/02/2019 to 23/02/2024 2020/2000003 Eurofins Agroscience Service France, Benfeld, France no Unpublished	No	BASF

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 6.6/26	XXX, A.	2018	GEP Certificate: SynTech Research France SAS, 2018 2018/1128731 SynTech Research, La Chapelle de Guinchay, France no Unpublished	No	BASF
KCP 6.6/27	XXX, A.	2018	GEP Certificate: Agrolis Consulting, Isle-sur-la-Sorgue, France 2018-2020 2018/1186469 Agrolis Consulting, Isle-Sur-La-Sorgue, France no Unpublished	No	BASF
KCP 6.6/28	XXX, A.	2018	GEP Certificate: Centrexpe Eurl - Angerville - France - 2018-2020 2018/1219542 EURL Centrexpe, Angerville, France no Unpublished	No	BASF
KCP 6.6/29	XXX, A.	2018	GEP Certificate - Astria 64 Castetis France - 2018-2023 2019/2053492 Astria 64 Sarl, Castetis, France no Unpublished	No	BASF
KCP 6.6/30	XXX, H.	2013	GEP Certificate: BASF SE Agrarzentrum Limburgerhof, Germany, 2013 2013/1412362 BASF SE, Limburgerhof, Germany Fed.Rep. no Unpublished	No	BASF
KCP 6.6/31	XXX, W.	2018	GEP Certificate - BASF SE Agrarzentrum Limburgerhof Germany - 2018 2018/1238674 BASF SE, Limburgerhof, Germany Fed.Rep. no Unpublished	No	BASF

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 6.6/32	XXX J.	2019	GEP Certificate - Hetterich Fieldwork GbR Schwarzach - Germany 2019/2041586 Hetterich Fieldwork GbR, Schwarzach, Germany Fed.Rep. no Unpublished	No	BASF
KCP 6.6/33	Anonymous	2011	GEP Certificate - SynTech Research Hungary Kft. - Taplanszentkereszt - HU 2011 2011/1291596 SynTech Research Hungary Kft., Taplanszentkereszt, Hungary no Unpublished	No	BASF
KCP 6.6/34	Anonymous	2012	GEP Certificate: BASF Hungaria Kft, Budapest, Hungary 2012/1136722 BASF Hungaria Kft., Budapest, Hungary no Unpublished	No	BASF
KCP 6.6/35	XXX, T.	2017	GEP Certificate - BASF Hungaria Kft - Budapest - Hungaria - 2017 2017/1077283 BASF Hungaria Kft., Budapest, Hungary no Unpublished	No	BASF
KCP 6.6/36	XXX, M.	2016	GEP Certificate - SynTech Research Hungary Kft. Szombathely Hungary - 2016 2016/1350307 SynTech Research Hungary Kft., Szombathely, Hungary no Unpublished	No	BASF
KCP 6.6/37	XXX, T.	2017	GEP Certificate - Agrofil-SZMI Kft. Pueski Hungary - 2017 2017/1190271 Agrofil-SZMI Kft., Pueski, Hungary no Unpublished	No	BASF

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 6.6/38	XXX, M.	2014	GEP Certificate: SGS Hungaria Kft., Budapest, Hungary 2019/2039376 no Unpublished	No	BASF
KCP 6.6/39	XXX, R.	2014	GEP Certificate: SIA Agrolab Baltic, Cesis, Latvia, 2014 2014/1327636 SIA Agrolab Baltic, Cesis, Latvia no Unpublished	No	BASF
KCP 6.6/40	XXX, R.	2019	GEP Certificate: SIA Agrolab Baltic Fungicide+Insecticide, Riga, Latvia, 2018 2019/1076012 SIA Agrolab Baltic, Riga, Latvia no Unpublished	No	BASF
KCP 6.6/41	XXX, R.	2016	GEP Certificate - Latvijas Augu aizsardzibas petniecias centrs, Riga, LV 2016/1350437 Latvian State Centre of Plant Protection, Riga, Latvia no Unpublished	No	BASF
KCP 6.6/42	XXX, E.	2013	GEP certificate - Lithuanian Institute of Agriculture, Akademija Lithuania - 2013-2019 2013/1418041 Lithuanian Institute of Agriculture, Akademija, Lithuania no Unpublished	No	BASF
KCP 6.6/43	XXX, T.	2010	GEP Certificate - Uniwersytet Technologiczno - Przyrodniczy im. Jana i Jedrzeja Sniadeckich - Wydzial Rolnictwa i Biotechnologii - Katedra Fitopatologii i Mikologii Molekularnej, Bydgoszcz, Poland 2010/1226832 <none> no Unpublished	No	BASF

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 6.6/44	XXX, D.	2010	GEP Certificate - Institute of Plant Protection - National Research Institute in Poznan - Sosnicowice Branch - Pesticide Efficacy Testing Department, Poland 2010/1226834 <none> no Unpublished	No	BASF
KCP 6.6/45	XXX, T.	2011	GEP Certificate - Agrostat Sp. z.o.o., Poland 2011/1269203 Agrostat Sp. z o.o., Poznan, Poland no Unpublished	No	BASF
KCP 6.6/46	XXX, T.	2011	GEP Certificate - BASF Polska Sp. z.o.o., Warsaw, Poland 2011/1269204 BASF Polska Sp. z o.o., Warsaw, Poland no Unpublished	No	BASF
KCP 6.6/47	Anonymous	2011	GEP Certificate - Institut of Plant Protection - National Research Institute - Department of Plant Protection Products - Team for Fungicide Investigation, Poznan, Poland 2011/1269209 Institute of Plant Protection - National Research Institute, Poznan, Poland no Unpublished	No	BASF
KCP 6.6/48	XXX, T.	2016	GEP Certificate - SGS Polska Sp. zo.o Warswa Poland - Translation 2016/1350127 SGS Polska Sp. zo.o., Warsaw, Poland no Unpublished	No	BASF
KCP 6.6/49	Anonymous	2017	GEP Certificate: Biotek Agriculture Polska Sp. z o.o., Olawa, Poland - 2017 2017/1230363 Biotek Agriculture Polska, Olawa, Poland no Unpublished	No	BASF

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 6.6/50	Anonymous	2018	GEP Certificate: AGRECO Sp. z o.o., Wroclaw, Poland 2018 2018/1181238 AGRECO Sp. z o.o., Wroclaw, Poland no Unpublished	No	BASF
KCP 6.6/51	XXX, E.	2015	GEP Certificate: S.C. Eurofins Agroscience Services SRL, Timisoara, Romania, 2015 2015/1174500 Eurofins Agroscience Services SRL, Timisoara, Romania no Unpublished	No	BASF
KCP 6.6/52	XXX, D.	2016	GEP Certificate - S.C. BASF SRL Calarasi Romania - 2016 2016/1135081 S.C. BASF SRL, Calarasi, Romania no Unpublished	No	BASF
KCP 6.6/53	XXX, B.	2016	GEP Certificate: FYSE s.r.o., Kolare, Slovakia, 2016 2016/1056229 FYSE s.r.o., Kolare, Slovakia no Unpublished	No	BASF
KCP 6.6/54	XXX, B.	2016	GEP Certificate - Gemerprodukt Valice OVD, Rimavska Sobota, Slowakia 2016 - Translation 2016/1273733 Gemerprodukt Valice OVD, Rimavska Sobota, Slovakia no Unpublished	No	BASF
KCP 6.6/55	XXX, B.	2016	GEP Certificate - UKSUP - Ustredny Kontrolny a Skusobny Ustav Polnohospodarsky, Kosice, Slovakia 2016 2016/1352907 UKSUP - Ustredny Kontrolny a Skusobny Ustav Polnohospodarsky, Kosice, Slovakia no Unpublished	No	BASF

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 6.6/56	Anonymous	2017	GEP Certificate - Berberis s.r.o., Boliarov, Slowakia 2017/1224930 Berberis s.r.o., Boliarov, Slovakia no Unpublished	No	BASF
KCP 6.6/57	Anonymous	2017	GEP Certificate - NPPC - Vyskumny ustav rastlinnej vyroby Piestany, Piestany, Slovakia 2017 2017/1226421 VURV - Vyskumny Ustav Rastlinnej Vyroby Piestany, Piestany, Slovakia no Unpublished	No	BASF
KCP 6.6/58	XXX, P.	2018	GEP Certificate - CVRV - Vyskumno-slachtitelska stanica Viglas-Pstrusa, Detva, Slovakia 2018 2018/1127784 CVRV - Vyskumno-slachtitelska stanica Viglas-Pstrusa, Detva, Slovakia no Unpublished	No	BASF
KCP 6.6/59	Anonymous	2015	GEP Certificate: Husec AB - Bjaerred - Sweden 2015/1284713 HUSEC AB, Bjaerred, Sweden no Unpublished	No	BASF
KCP 6.6/60	Anonymous	2016	GEP Certificate - Agrolab Sverige AB - Eslov - Sweden - 2016 2016/1354368 Agrolab Sverige AB, Eslov, Sweden no Unpublished	No	BASF
KCP 6.6/61	Anonymous	2013	GEP Certificate: BASF plc, United Kingdom, 2013 2013/1060882 BASF plc, Cheadle Cheshire SK8 6QG, United Kingdom no Unpublished	No	BASF

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 6.6/62	Anonymous	2018	GEP Certificate: BASF plc, United Kingdom, 2018 2018/1015310 BASF plc, Cheadle Cheshire SK8 6QG, United Kingdom no Unpublished	No	BASF
KCP 6.6/63	Anonymous	2016	GEP Certificate: RSK ADAS Limited UK 2016-2018 2016/1346468 RSK ADAS Ltd., Boxworth Cambridge CB23 4NN, United Kingdom no Unpublished	No	BASF
KCP 6.6/64	Anonymous	2018	GEP Certificate: RSK ADAS Limited UK 2018-2023 2018/1106019 RSK ADAS Ltd., Boxworth Cambridge CB23 4NN, United Kingdom no Unpublished	No	BASF

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

BAS 762 02 F is a new product, no product data have been evaluated previously.

List of data submitted by the applicant and not relied on

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

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

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