FINAL REGISTRATION REPORT

Part B

Section 3

Efficacy Data and Information

Concise summary

Product code: **ORKAN 350 SL**

Product name(s): **ORKAN 350 SL,**

SPRINTER 350 SL

Chemical active substance(s):

MCPA, 90 g/L
Glyphosate, 260 g/L

Central Zone

Zonal Rapporteur Member State: **Poland**

CORE ASSESSMENT

(renewal of authorization)

Applicant: **SYNTHOS AGRO Sp. z o.o.**

Submission date: 04.2020

MS Finalisation date: 09.2020**;** 11.2021

Version history

When	What
09/ 2020	ZRMs evaluated version of dRR.
11/2021	Evaluation after commenting period - RR

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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)

The process chosen by the zRMS to transform the dRR into a RR should be explained. Options are to rewrite the document (with track change or not) or to use commenting boxes such as the following:

Comments of zRMS:	Comments of zRMS are presented in commenting boxes at the end of each chapter. The text of dRR was generally not changed or rewritten (small changes in the document are marked by grey colour).

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

Abstract

Comments of zRMS: Overall summaries are not necessary here. It was provided at the end of each chapter of the dRR.

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. *	**Member state(s)**	**Crop and/ or situation** (crop destination / purpose of crop)	**F, Fn, Fnp G, Gn, Gnp 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, other dose rate expression, dose range (min-max)	**zRMS Conclusion (efficacy)**
					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	Poland	Apple	F	**susceptible weeds in dose 5,0 l/ha:** *Senecio vulgaris* *Stellaria media* *Capsella-bursa-pastoris* ~~*Galium aparine*~~ *Poa annua* *Echinochloa crus-galli* *Chenopodium album* **susceptible weeds in dose 7,0 – 8 l/ha l/ha:** ~~*Chenopodium album*~~ *Geranium pusillum* *Convolvulus arvensis Polygonum aviculare* *Malva neglecta* ~~**susceptible weeds in dose 8,0 l/ha:**~~ *Taraxacum officinale* *Epilobium ciliatum* ~~*Lamium purpureum*~~ *Elymus repens* *Equisetum arvense*	Foliar spraying; medium drops.	Product used in period intensive growth weeds in dose needed to destruction occurring species weeds	1	-	5,0- 8,0 L/ha	In dose 5L/ha: 0,45 kg/ha (MCPA) 1,30 kg/ha (glyphosate) In dose 7-8L/ha: 0,63-0,72 kg/ha (MCPA) 1,82-2,08 kg/ha (glyphosate)	300 L/ha	n.a.		Acceptable with further restrictions. At first registration was: 7-8 l/ha, not separately the weed classification for 7 and 8 l/ha. We can't take into account weeds that were not taken into account during the first registration (*Galium aparine*, *Lamium purpureum*)
Minor uses according to Article 51 (field uses)														
2	Poland	Cherry	F	**susceptible weeds in dose 5,0 l/ha:** *Senecio vulgaris* *Stellaria media*	Foliar spraying; medium drops.	Product used in period intensive	1	-	5,0- 8,0 ~~7,0~~ L/ha	In dose 5L/ha: 0,45 kg/ha (MCPA)	300 L/ha	n.a.		Acceptable with further restrictions. At first

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Use-No. *	**Member state(s)**	**Crop and/ or situation** (crop destination / purpose of crop)	**F, Fn, Fnp G, Gn, Gnp 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, other dose rate expression, dose range (min-max)	**zRMS Conclusion (efficacy)**
					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			
				Poa annua *Vicia cracca* *Chenopodium album* ***susceptible weeds in dose ~~7,0~~ 8,0 l/ha:*** *Taraxacum officinale* *Epilobium ciliatum*		growth weeds in dose needed to destruction occurring species weeds				1,30 kg/ha (glyphosate) In dose ~~7~~ 8 L/ha: ~~0,63~~ 0,72 kg/ha (MCPA) ~~1,82~~ 2,08 kg/ha (glyphosate)				registration dose 5-8 l/ha was registered, not 5-7 l/ha.
3	Poland	Pear, ~~quince, medlar~~	F	**susceptible weeds in dose 5,0 l/ha:** *Senecio vulgaris* *Stellaria media* *Capsella-bursa-pastoris* *~~Galium aparine~~* *Poa annua* *Echinochloa crus-galli* **susceptible weeds in dose ~~7,0~~ 8,0 l/ha:** *Chenopodium album* *Geranium pusillum* *Convolvulus arvensis Polygonum aviculare* *Malva neglecta* **~~susceptible weeds in dose 8,0 l/ha:~~** *Taraxacum officinale* *Epilobium ciliatum* *~~Lamium purpureum~~* *Elymus repens* *Equisetum arvense*	Foliar spraying; medium drops.	Product used in period intensive growth weeds in dose needed to destruction occurring species weeds	1	-	5,0- 8,0 L/ha	In dose 5L/ha: 0,45 kg/ha (MCPA) 1,30 kg/ha (glyphosate) In dose ~~7-~~8L/ha: ~~0,63-~~0,72 kg/ha (MCPA) ~~1,82-~~2,08 kg/ha (glyphosate)	300 L/ha	n.a.		Acceptable with further restrictions. At first registration only pear was accepted. Dose 5-8 l/ha was registered, not 5-7 l/ha.
4	Poland	Sweet cherry, plum, peach, apricot, ~~nectarine~~	F	**susceptible weeds in dose 5,0 l/ha:** *Senecio vulgaris* *Stellaria media* *Poa annua*	Foliar spraying; medium drops.	Product used in period intensive growth weeds	1	-	5,0- ~~8,0~~ ~~7,0~~ L/ha	In dose 5L/ha: 0,45 kg/ha (MCPA) 1,30 kg/ha	300 L/ha	n.a.		Acceptable with further restrictions. At first registration

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Use-No. *	**Member state(s)**	**Crop and/ or situation** (crop destination / purpose of crop)	**F, Fn, Fnp G, Gn, Gnp 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, other dose rate expression, dose range (min-max)	**zRMS Conclusion (efficacy)**
					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			
				Vicia cracca *Chenopodium album* ***susceptible weeds in dose ~~7,0~~ 8,0 l/ha:*** *Taraxacum officinale* *Epilobium ciliatum*		in dose needed to destruction occurring species weeds				(glyphosate) In dose ~~7~~ 8,0 L/ha: ~~0,63~~ 0,72 kg/ha (MCPA) ~~1,82~~ 2,08 kg/ha (glyphosate)				only plum, peach and apricot were accepted. Dose 5-8 l/ha was registered, not 5-7 l/ha.
~~5~~	~~Poland~~	~~Hazelnuts, Walnuts~~	~~F~~	~~**susceptible weeds in dose 5,0 l/ha:**~~ ~~*Senecio vulgaris*~~ ~~*Stellaria media*~~ ~~*Capsella-bursa-pastoris*~~ ~~*Galium aparine*~~ ~~*Poa annua*~~ ~~*Echinochloa crus-galli*~~ ~~**susceptible weeds in dose 7,0 l/ha:**~~ ~~*Chenopodium album*~~ ~~*Geranium pusillum*~~ ~~*Convolvulus arvensis Polygonum aviculare*~~ ~~*Malva neglecta*~~ ~~**susceptible weeds in dose 8,0 l/ha:**~~ ~~*Taraxacum officinale*~~ ~~*Epilobium ciliatum*~~ ~~*Lamium purpureum*~~ ~~*Elymus repens*~~ ~~*Equisetum arvense*~~	~~Foliar spraying; medium drops.~~	~~Product used in period intensive growth weeds in dose needed to destruction occurring species weeds~~	~~1~~	~~-~~	~~5,0- 8,0 L/ha~~	~~In dose 5L/ha: 0,45 kg/ha (MCPA) 1,30 kg/ha (glyphosate) In dose 7-8L/ha: 0,63-0,72 kg/ha (MCPA) 1,82-2,08 kg/ha (glyphosate)~~	~~300 L/ha~~	~~n.a.~~		Not acceptable according to 43 Article. New uses can be accepted only according to extension of approval.

* 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
n.r.	Not relevant for section 3

3.2 Efficacy data (KCP 6)

Introduction

Applicant applies for re-authorization for the marketing of plant protection product Orkan 350 SL pursuant to article ~~33~~ 43 of the Regulation of the European Parliament and the Council in a number 1107/2009 of 21 October 2009.
DRR this core assessment. The application shall be in Poland. The applicant points out Poland as a country rapporteur Requested. The formulation of this product is soluble (liquid) concentrate (SL).
This document describes the acceptable use conditions required for the registration of Orkan 350 SL containing as a.i MCPA (90 g/L), glyphosate (260 g/L).
Glyphosate: *N*-(phosphonomethyl)glycine (IUPAC classification) belongs to phosphonoglycine group.
Glyphosate was included into Annex I (date of approval: 1 July 2002) of Directive 91/414 by Commission Directive 2001/99/EC of 20 November 2001 amending Annex I to Council Directive 91/414/EEC concerning the placing of plant protection products on the market to include glyphosate and thifensulfuron-methyl as active substances.
Glyphosate an active substance of Cyklop 400 SL, is listed in the Annex to Commission Implementing Regulation (EU) No 540/2011 of 25 May 2011 implementing Regulation (EC) No 1107/2009 of the European Parliament and of the Council as regards the list of approved active substances with the expiration of approval on 31 December 2015. COMMISSION IMPLEMENTING REGULATION (EU) 2016/1056 of 29 June 2016 amending Implementing Regulation (EU) No 540/2011 as regards the extension of the approval period of the active substance glyphosate to 31 December 2017.
According to general provisions applying to all substances listed in the Annex to Commission Implementing Regulation (EU) No 540/2011:
- for the implementation of the uniform principles as referred to in Article 29(6) of Regulation (EC) No 1107/2009 in relation to each substance, the conclusions of the review report on it, and in particular the Appendices I and II thereof, shall be taken into account;
- Member States shall keep available all review reports (except for confidential information within the meaning of Article 63 of Regulation (EC) No 1107/2009) for consultation by any interested parties or shall make it available to them on specific request.
According to specific provisions in part A and B of the Annex to Commission Implementing Regulation (EU) No 540/2011 for glyphosate: N-(phosphonomethyl)-glycin, CAS No 1071-83-6, CIPAC No 284, PART A- Only uses as herbicide may be authorised.
PART B- For the implementation of the uniform principles as referred to in Article 29(6) of Regulation (EC) No 1107/2009, the conclusions of the review report on glyphosate, and in particular Appendices I and II thereof, as finalised in the Standing Committee on Plant Health on 29 June 2001 shall be taken into account.
In this overall assessment Member States: must pay particular attention to the protection of the groundwater in vulnerable areas, in particular with respect to non-crop uses.
MCPA was included into Annex I of Directive 91/414 Nr 2005/57/ EEC of 21 September 2005 amending Council Directive 91/414/EEC to include MCPA and MCPB as active substances and is now deemed approved under Reg. 1107/2011, (via Reg. 540/2011).
The SANCO report for MCPA(SANCO/4062/2001final – 11/06/2008) is considered to provide the relevant review information or a reference to where such information can be found.
Commission Implementing Regulation (EU) 2019/1589 of 26 September 2019 amending Implementing Regulation (EU) No 540/2011 as regards the extension of the approval periods of the active substances amidosulfuron, beta-cyfluthrin, bifenox, chlorotoluron, clofentezine, clomazone, cypermethrin, daminozide, deltamethrin, dicamba, difenoconazole, diflubenzuron, diflufenican, fenoxaprop-P, fenpropidin, fludioxonil, flufenacet, fosthiazate, indoxacarb, lenacil, MCPA, MCPB, nicosulfuron, picloram, prosulfocarb, pyriproxyfen, thiophanate-methyl, triflusulfuron and tritosulfuron.

This documentation is being written for renewal of product Orkan 350 SL. Orkan 350 SL was used for many years in orchards for the control of: *Echinochloa crus-gali, Stellaria media, Chenopodium album,*

Senecio vulgaris, Capsella-bursa-pastoris, Poa annua, Geranium pusillum, Taraxacum officinale, Elymus repens, Convolvulus arvensis, Polygonum aviculare, Equisetum arvense, Malva neglecta, Epilobium ciliatum.

Description of active substances

Glyphosate is not a new substance. Glyphosate is the ISO common name for *N*-(phosphonomethyl)-glycin (IUPAC). CAS number for Glyphosate : 1071-83-6. CIPAC number for Glyphosate: 0284.
MCPA is not a new substance. MCPA is the ISO common name for 4-chloro-o-tolyloxyaceic acid (IUPAC). CAS number for MCPA: 94-74-6. CIPAC number for MCPA: 2.

Mode of action

Glyphosat**e** is an organic phosphorus compound, belonging to the chemical class of glycines, with no or low soil residual activity. Herbicides containing glyphosate differ in the salt formulation. Glyphosate may be present as glyphosate-ammonium-salt, as glyphosate-isopropylamine-salt or as glyphosate-potassium-salt. Glyphosate is a non-selective herbicidal active substance. Glyphosate is taken up by the leaves and other green parts of the plant and is translocated systemically (apoplastic and symplastic) in the whole plant, also in underground parts like roots, rhizomes or stolons. Glyphosate uptake through the roots is negligible because the active substance is strongly adsorbed in the soil. The extensive adsorption of glyphosate together with a rapid degradation in soil are the principal deactivation and dissipation mechanisms in the soil environment. In plants, glyphosate inhibits the shikimic acid pathway. Glyphosate binds to and blocks the activity of its target enzyme EPSPS (5-enolpyruvylshikimate-3-phosphate synthase), an enzyme of the aromatic amino acid biosynthetic pathway. The inhibition of the enzyme prevents the plant from synthesising the essential aromatic amino acids (e.g. phenylalanine, tyrosine, tryptophane) needed for protein biosynthesis. This reduces the production of protein in the plant, and inhibits plant growth. EPSPS is present in all plants. It leads to an accumulation of the amino acids glutamine, glutamic acid, shikimic acid and ammonia. As a consequence of missing aromatic amino acids the formation of phenolic compounds is inhibited (e.g. lignin, flavanoids). First signs of wilting occur in annual weeds 4 days and in perennial weeds 7 to 10 days after herbicide application. Leaf symptoms are usually detected 7 to 14 days after application, while a complete death of the plant takes up to 30 days. As light affects the metabolism via photosynthesis, a higher activity in plants means a better distribution of glyphosate and thus greater herbicidal effect. Increasing temperatures result in increased biochemical activity, and thus in an increased rate of efficacy. Optimum temperatures are 10 to 20 °C. High humidity affects the quality of the leaf surface and thus promotes the uptake of the herbicide. Plant metabolism studies have been conducted on numerous crops. The only significant metabolite in plants was aminomethylphosphonic acid (AMPA). AMPA is not biologically active within soils.

MCPA is a selective herbicide to be used in cereals for the control of dicotyledonous weeds. MCPA is a very known systemic phenoxy herbicide used to control annual and perennial weeds in cereals, grasslands, trees and turf. As with some of the other phenoxy herbicides, MCPA is an acid, but it is often formulated as a salt such as diethanolamine salt. The herbicide is a growth regulator, works by concentrating in the actively growing regions of a plant (meristematic tissue) where it interferes with protein synthesis, cell division and ultimately the growth of the plant. Most use of MCPA is in cereals and maize due to complete selective action against grass. Plant protection products based on MCPA very effectively destroys dicot weeds like poppy or brassica weeds, but not acts against monocot plants like cereals. Symptoms of acts of MCPA herbicide: curling of leaves, petioles and even stem. Growth regulator herbicides are used 75 years and there's no signs about any resistance.
MCPA is a systemic auxin-type herbicide active ingredient. MCPA controls a wide range of broad leaved weeds. MCPA is a soluble concentrate plant protection product. MCPA containing preparations are mainly used for post-emergence weed control in field crops such as cereals, in grassland (including turf), in orchards, and vineyards. Further uses comprise flax, rice for industrial vegetation control. MCPA formulations are compatible with many herbicides which are frequently mixed.

Table 3.2-1: Details of the active substances

Active substance	glyphosate	MCPA
Concentration (Unit: g/kg or g/L...)	260 g/L	90 g/L
Chemical group	Phosphonoglycine	Phenoxy-carboxylic-acid
Mode of action	Inhibitors of amino acid synthesis	Growth regulators, syntetic auxine
Biological action	foliar spraying; post-emergence herbicide	foliar spraying; post-emergence herbicide
Group of pesticides	herbicide	herbicide

Description of the plant protection product

Orkan 350 SL is a soluble (liquid) concentrate (SL) containing 260 g/L glyphosate and 90 g/L MCPA.

Table 3.2-2: Simplified table of currently registered uses and requested uses for the product code.

Uses		Member State	Requested rate(s)	Comments / Other relevant details on GAPs
Crop(s)	Target(s)			
Apple, pear, quince, medlar, hazelnuts, walnuts	*Senecio vulgaris* *Stellaria media* *Capsella-bursa-pastoris* ~~*Galium aparine*~~ *Poa annua* *Echinochloa crus-galli* *Chenopodium album* ~~*Chenopodium album*~~ *Geranium pusillum* *Convolvulus arvensis* *Polygonum aviculare* *Malva neglecta* *Taraxacum officinale* *Epilobium ciliatum* ~~*Lamium purpureum*~~ *Elymus repens* *Equisetum arvense*	PL	5L/ha ~~7 L/ha~~ 7- 8 L/ha	After previous registartion classification of weeds differ in some cases to propsoed by Applicant in this table. So, Evaluator made changes in grey colour, according to previous registration. At previous registration dose 5 l/ha and 7-8 l/ha was registered. Not separately 5 l/ha, 7 l/ha and 8 l/ha.
Cherry, Sweet cherry, plum, peach, apricot, ~~nectarine,~~ pear	*Senecio vulgaris* *Stellaria media* *Poa annua* *Vicia cracca* *Chenopodium album* *Taraxacum officinale* *Epilobium ciliatum*	PL	5-8 L/ha ~~7 L/ha~~	At previous registartion those crops were accepted in label according to 51 Article. Nectarine was not included after previous registration in the label. Pear should be included according to previous registartion.

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	Polish name
SENVU	*Senecio vulgaris*	Starzec zwyczajny
STEME	*Stellaria media*	Gwiezdnica pospolita
CAPBP	*Capsella-bursa-pastoris*	Tasznik pospolity
GALAP	*Galium aparine*	Przytulia czepna
POAAN	*Poa annua*	Wiechlina roczna
CHEAL	*Chenopodium album*	Komosa biała
GERPU	*Geranium pusillum*	Bodziszek drobny
TAROF	*Taraxacum officinale*	Mniszek pospolity
EPICT	*Epilobium ciliatum*	Wierzbownica gruczołowata
LAMPU	*Lamium purpureum*	Jasnota purpurowa
VICCR	*Vicia cracca*	Wyka ptasia
ECHCG	*Echinochloa crus-galli*	Chwastnica jednostronna
AGRRE	*Elymus repens*	Perz właściwy
CONAR	*Convolvulus arvensis*	Powój polny
POLAV	*Polygonum aviculare*	Rdest ptasi
EQUAR	*Equisetum arvense*	Skrzyp polny
MALNE	*Malva neglecta*	Ślaz zaniedbany

* optional

Weeds controlled by the plant protection product Orkan 350 SL are: SENVU, STEME, CAPBP, GALAP, POAAN, CHEAL, GERPU, TAROF, EPICT, LAMPU, VICCR, ECHCG, CONAR, POLAV, MALNE, AGRRE, EQUAR.

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

Crop and/or situation	Crop status		Pests or group of pests controlled	Pest status	
	Major	minor		Major	minor
Orchards apple (path under apple trees)	PL	-	*Senecio vulgaris*	PL	-
			Stellaria media	PL	-
			Capsella-bursa-pastoris	PL	-
			Galium aparine	PL	-
			Poa annua	-	PL
			Chenopodium album	PL	-
			Geranium pusillum	-	PL
			Taraxacum officinale	PL	-
			Epilobium ciliatum	PL	-
			Lamium purpureum	-	PL

Crop and/or situation	Crop status		Pests or group of pests controlled	Pest status	
	Major	minor		Major	minor
			Echinochloa crus-galli	PL	-
			Elymus repens	PL	-
			Convolvulus arvensis	-	PL
			Polygonum aviculare	-	PL
			Equisetum arvense	-	PL
			Malva neglecta	-	PL
Orchards cherry (path under cherry trees)	-	PL	*Senecio vulgaris*	PL	-
			Stellaria media	PL	-
			Poa annua	-	PL
			Vicia cracca	-	PL
			Chenopodium album	PL	-
			Taraxacum officinale	PL	-
			Epilobium ciliatum	PL	-
Orchards pear (path under pear trees)	-	PL	*Senecio vulgaris*	PL	-
			Stellaria media	PL	-
			Capsella-bursa-pastoris	PL	-
			Galium aparine	PL	-
			Poa annua	-	PL
			Chenopodium album	PL	-
			Geranium pusillum	-	PL
			Taraxacum officinale	PL	-
			Epilobium ciliatum	PL	-
			Lamium purpureum	-	PL
			Echinochloa crus-galli	PL	-
			Elymus repens	PL	-
			Convolvulus arvensis	-	PL
			Polygonum aviculare	-	PL
			Equisetum arvense	-	PL
			Malva neglecta	-	PL
Orchards sweet cherry, plum, peach, apricot (path under trees)	-	PL	*Senecio vulgaris*	PL	-
			Stellaria media	PL	-
			Poa annua	-	PL
			Vicia cracca	-	PL
			Chenopodium album	PL	-
			Taraxacum officinale	PL	-
			Epilobium ciliatum	PL	-

Information on trials submitted (3.1 Efficacy data)

Table 3.2-5: Presentation of trials (efficacy trials, preliminary trials...)

Crop(s) *	Target(s)*	Country	Years	Type of trial**	Number of trials (number of valid trials)		GEP, non-GEP, official***	Comments (any other relevant information)
					Poland	-		
Orchards apple (path under apple trees)	Weeds monocotyledonus and dicotyledonous	Poland	2001	MED+E	2	-	GEP	The study was conducted in Poland under different climate and soil for different varieties of apple
		Poland	2019	MED+E	6	-	GEP	
TOTAL	-	-		-	8	-	-	
Orchards cherry (path under cherry trees)	Weeds monocotyledonus and dicotyledonous	Poland	2019	MED+E	4	-	GEP	The study was conducted in Poland under different climate and soil for different varieties of cherry
TOTAL	-	-		-	4	-	-	

* According to the GAP table. Timing of the application(s) can be added if relevant (e.g. Pre-mergence vs post-emergence, spring vs autumn).
** P = preliminary trial, MED = minimum effective dose, E = efficacy trial.
*** GEP: Good Experimental Practices. Official: carried out by a national official organisation.

Table 3.2-6: Presentation of reference standards used in trials (efficacy trials, preliminary trials...)

Crop(s)	Reference standard	Country(ies) where the product is registered (1)	Authorization number	Active substance(s)	Formulation		Registered application rate(3)	Application rate in trials (per treatment)	Remark(4)
					Type(2)	Concentration of a.s.			
Orchards apple, cherry	Chwastox Extra 300 SL	Poland	Zezwolenie MRiRW nr R-77/2010 z dnia 08.10.2010 r. zmienione ostatnio decyzją MRiRW nr R - 273/2019d z dnia 29.03.2019 r.	MCPA	SL	90 g/l	2,5 L/ha	2,5 L/ha	
	Agrosar 360 SL	Poland	Zezwolenie MRiRW nr R - 35/2014 z dnia 13.03.2014 r. ostatnio zmienione decyzją MRiRW nr R - 655/2017d z dnia 19.12.2017 r.	Glyphosate	SL	360 g/l	3-8 L/ha	5 L/ha	
	Roundup 360 SL	Poland	Zezwolenie MRiG Nr 213/97 z dnia 26.09.1997 r. zmienione decyzja MRiRW Nr R-286/2003p z dnia 08.08.2003 r., decyzja MRiRW Nr R-145/2004o z dnia 25.03.2004 r. oraz decyzja MRiRW Nr R-345/2004 z dnia 18.10.2004 r.	Glyphosate	SL	360 g/l	2-8 L/ha	5 L/ha	

Crop(s)	Reference standard	Country(ies) where the product is registered (1)	Authorization number	Active substance(s)	Formulation		Registered application rate(3)	Application rate in trials (per treatment)	Remark(4)
					Type(2)	Concentration of a.s.			
	Kileo 400 SL	Poland	Zezwolenie MRiRW nr R - 71/2013 r. z dnia 03.06.2013 r. ostatnio zmienione decyzją MRiRW nr R- 406/2017d z dnia 16.08.2017 r.	2,4-D + Glyphosate	SL	160 g/l + 240 g/l	5-6 L/ha	6 L/ha	

(1) only on use(s) applied for (with the test product).
(2) e.g. WP (wettable powder), EC (emulsifiable concentrate), etc.
(3) dose(s) / dose range authorized on that use in the country.
(4) Other relevant information (e.g. uses, number of applications, spray volume, method of application, etc.).

Comments of zRMS:	This document summarizes the information related to the efficacy of the plant protection product – ORKAN 350 SL / SPRINTER 350 SL (product code: ORKAN 350 SL). The formulation of this product is a soluble (liquid) concentrate (SL) and it containing two active substances: MCPA (90 g/L) and glyphosate (260 g/L). For now, this mentioned active substances are on the list of approved active substances. This application is for renewal of the authorisation for ORKAN 350 SL / SPRINTER 350 SL in accordance with Article 43 (of Reg. (EC) 1107/2009), following the renewal of the active substance glyphosate. Glyphosate gained approval following the renewal process on 12/2017 and this approval will expire on 12/2022. This application is to be considered under 1107/2009, and requires evidence to address all efficacy data requirements including; dose justification (minimum effective dose), effectiveness, resistance, yield (quality, quantity and transformation processes), phytotoxicity, effects on succeeding and adjacent crops, effects on plant parts for propagation and effects on beneficial/non-target organisms. However, the proposed GAP is changed and the proposed uses are not identical to the authorised uses, compared to the previous registration by Evaluator. Therefore, not only aspect that will be considered by the zRMS is the resistance risk assessment, which requires updating at renewal, but also the efficacy. Applicant has changed the weed sensitivity characteristics in relation to the change of the doses for apple trees from 5 l/ha and 7-8 l/ha to 5 l/ha, 7 l/ha and 8 l/ha. In addition, the Applicant presented new efficacy studies for apple -6 trials carried out in 2019 and for cherry – 4 trials carried out in 2019. Howerer, in the opinion of Evaluator since its renewal, such changes are not allowed. Re-registered product should be similar to previous registration. If Applicant wish to change uses, he should submit a request for extension and the evaluation of the report should take place in accordance with Article 45. The applicant applies for the renewal of the registration under Article 43, therefore the introduction of major changes is not acceptable. The Evaluator seen some discrepancies between the presented GAP table and the label design. The difference concerns cherries, which in the GAP are classified as small area crops and treated in accordance with the ART. 51 (no tests required), while the Applicant submitted 4 efficacy studies performed in 1 vegetation season. Considering the fact that during the first registration, cherries were included for the application of plant protection product in minor crops and applications, now are included in the proposed GAP table as minor uses according to Article 51, they should be classified in accordance with earlier registered label (R-133/2016d, dated: 01.03.2016) and the

	GAP table accepted. Hazelnuts, walnuts, nectarine, quince, medlar cannot be accepted according to Article 43. Those minor crops were not included in the label after first registration. If the applicant wishes to expand the label, a request to the Ministry of Agriculture and Rural Development for extend the use of the product should be made. Extensions cannot be considered for renewing on the basis on 43 Article. **This is an Article 43 application (of Reg. (EC) 1107/2009) and as such only specific new data 'required as a result of new data requirements/new or changed endpoints or criteria or are necessary to amend original conditions of approval' (as detailed in SANCO/2010/13170 rev 13) can be considered. New data intended to support new uses should be submitted in an Article 33 application.**

3.2.1 Preliminary tests (KCP 6.1)

Preliminary studies have not been conducted because the active substances (MCPA, glyphosate) are known and has long been used in the protection of plants. The effect of the active substances is well known and sufficient large scale efficacy trials are available to evaluate the effectiveness of Orkan 350 SL. Therefore, preliminary tests are not described and not required. This documentation is being written for renewal of product Orkan 350 SL. Orkan 350 SL was used for many years in orchards for the control of: *Echinochloa crus-gali, Stellaria media, Chenopodium album, Senecio vulgaris, Capsella-bursa-pastoris, Poa annua, Geranium pusillum, Taraxacum officinale, Elymus repens, Convolvulus arvensis, Polygonum aviculare, Equisetum arvense, Malva neglecta, Epilobium ciliatum.* This product is well known and successfully used for many years. Previous documentation was based on two trials conducted in 2000. Both trials showed high efficacy against *Echinochloa crus-galli, Elymus repens, Convolvulus arvensis, Polygonum aviculare, Equisetum arvense and Malva neglecta* in apple orchards.

Comments of zRMS:	This is an Article 43 (of Reg. (EC) 1107/2009) application for the products ORKAN 350 SL/ SPRINTER 350 SL, following the renewal of the active substance glyphosate. Since this is an Article 43 application, it is inappropriate to consider new data or claims that are not directly required as part of the renewal of the active substance. Hence, with this application no new data or claims are considered. Also, this information's were assessed during first registration of ORKAN 350 SL / SPRINTER 350 SL.

3.2.2 Minimum effective dose tests (KCP 6.2)

No results of preliminary screening tests are here. The efficacy of reduced rates of Orkan 350 SL for weed control in apple and cherry orchards was investigated in field tests carried out in 2019. In the appropriate researches of efficacy were tested several doses and to register was chosen the lowest effective. All researches were conducted according to EPPO standard PP 1/225 *'Minimum effective dose'.*

Apple orchards/TAROF

5 field trials were established in order to determine the minimum effective dose for the control of the apple orchards/TAROF. Orkan 350 SL was tested at 5 to 8 L/ha in apple orchards for the control of TAROF. The rates reflect the proposed label rate and 60% and 80% of the full recommended rate of Orkan 350 SL in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

Apple orchards/EPICT

5 field trials were established in order to determine the minimum effective dose for the control of the apple orchards/EPICT. Orkan 350 SL was tested at 5 to 8 L/ha in apple orchards for the control of EPICT. The rates reflect the proposed label rate and 60% and 80% of the full recommended rate of Orkan 350 SL in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

Apple orchards/SENVU

3 field trials were established in order to determine the minimum effective dose for the control of the apple orchards/SENVU. Orkan 350 SL was tested at 5 to 8 L/ha in apple orchards for the control of SENVU. The rates reflect the proposed label rate and 60% and 80% of the full recommended rate of Orkan 350 SL in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

Apple orchards/STEME

6 field trials were established in order to determine the minimum effective dose for the control of the apple orchards/STEME. Orkan 350 SL was tested at 5 to 8 L/ha in apple orchards for the control of STEME. The rates reflect the proposed label rate and 60% and 80% of the full recommended rate of Orkan 350 SL in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

Apple orchards/CAPBP

4 field trials were established in order to determine the minimum effective dose for the control of the apple orchards/CAPBP. Orkan 350 SL was tested at 5 to 8 L/ha in apple orchards for the control of CAPBP. The rates reflect the proposed label rate and 60% and 80% of the full recommended rate of Orkan 350 SL in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

Apple orchards/GALAP

3 field trials were established in order to determine the minimum effective dose for the control of the apple orchards/GALAP. Orkan 350 SL was tested at 5 to 8 L/ha in apple orchards for the control of GALAP. The rates reflect the proposed label rate and 60% and 80% of the full recommended rate of Orkan 350 SL in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

Apple orchards/POAAN

2 field trials were established in order to determine the minimum effective dose for the control of the apple orchards/POAAN. Orkan 350 SL was tested at 5 to 8 L/ha in apple orchards for the control of POAAN. The rates reflect the proposed label rate and 60% and 80% of the full recommended rate of Orkan 350 SL in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

Apple orchards/LAMPU

2 field trials were established in order to determine the minimum effective dose for the control of the apple orchards/LAMPU. Orkan 350 SL was tested at 5 to 8 L/ha in apple orchards for the control of LAMPU. The rates reflect the proposed label rate and 60% and 80% of the full recommended rate of Orkan 350 SL in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

Apple orchards/CHEAL

3 field trials were established in order to determine the minimum effective dose for the control of the apple orchards/CHEAL. Orkan 350 SL was tested at 5 to 8 L/ha in apple orchards for the control of CHEAL. The rates reflect the proposed label rate and 60% and 80% of the full recommended rate of Orkan 350 SL in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

Apple orchards/GERPU

2 field trials were established in order to determine the minimum effective dose for the control of the apple orchards/GERPU. Orkan 350 SL was tested at 5 to 8 L/ha in apple orchards for the control of GERPU. The rates reflect the proposed label rate and 60% and 80% of the full recommended rate of Orkan 350 SL in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

Apple orchards/ECHCG

2 field trials were established in order to determine the minimum effective dose for the control of the apple orchards/ECHCG. Orkan 350 SL was tested at 5 to 8 L/ha in apple orchards for the control of ECHCG. The rates reflect the proposed label rate and 60% and 80% of the full recommended rate of Orkan 350 SL in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

Apple orchards/AGRRE

2 field trials were established in order to determine the minimum effective dose for the control of the apple orchards/AGRRE. Orkan 350 SL was tested at 5 to 8 L/ha in apple orchards for the control of AGRRE. The rates reflect the proposed label rate and 60% and 80% of the full recommended rate of Orkan 350 SL in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

Apple orchards/CONAR

2 field trials were established in order to determine the minimum effective dose for the control of the apple orchards/CONAR. Orkan 350 SL was tested at 5 to 8 L/ha in apple orchards for the control of CONAR. The rates reflect the proposed label rate and 60% and 80% of the full recommended rate of Orkan 350 SL in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

Apple orchards/POLAV

2 field trials were established in order to determine the minimum effective dose for the control of the apple orchards/POLAV. Orkan 350 SL was tested at 5 to 8 L/ha in apple orchards for the control of POLAV. The rates reflect the proposed label rate and 60% and 80% of the full recommended rate of Orkan 350 SL in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

Apple orchards/EQUAR

2 field trials were established in order to determine the minimum effective dose for the control of the apple orchards/EQUAR. Orkan 350 SL was tested at 5 to 8 L/ha in apple orchards for the control of EQUAR. The rates reflect the proposed label rate and 60% and 80% of the full recommended rate of Orkan 350 SL in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

Apple orchards/MALNE

2 field trials were established in order to determine the minimum effective dose for the control of the apple orchards/MALNE. Orkan 350 SL was tested at 5 to 8 L/ha in apple orchards for the control of MALNE. The rates reflect the proposed label rate and 60% and 80% of the full recommended rate of Orkan 350 SL in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

Cherry orchards/TAROF

4 field trials were established in order to determine the minimum effective dose for the control of the cherry orchards/TAROF. Orkan 350 SL was tested at 5 to 8 L/ha in cherry orchards for the control of TAROF. The rates reflect the proposed label rate and 60% and 80% of the full recommended rate of Orkan 350 SL in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

Cherry orchards/EPICT

3 field trials were established in order to determine the minimum effective dose for the control of the cherry orchards/EPICT. Orkan 350 SL was tested at 5 to 8 L/ha in cherry orchards for the control of EPICT. The rates reflect the proposed label rate and 60% and 80% of the full recommended rate of Orkan 350 SL in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

Cherry orchards/SENVU

2 field trials were established in order to determine the minimum effective dose for the control of the cherry orchards/SENVU. Orkan 350 SL was tested at 5 to 8 L/ha in cherry orchards for the control of SENVU. The rates reflect the proposed label rate and 60% and 80% of the full recommended rate of Orkan 350 SL in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

Cherry orchards/STEME

4 field trials were established in order to determine the minimum effective dose for the control of the cherry orchards/STEME. Orkan 350 SL was tested at 5 to 8 L/ha in cherry orchards for the control of STEME. The rates reflect the proposed label rate and 60% and 80% of the full recommended rate of Orkan 350 SL in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

Cherry orchards/POAAN

3 field trials were established in order to determine the minimum effective dose for the control of the cherry orchards/POAAN. Orkan 350 SL was tested at 5 to 8 L/ha in cherry orchards for the control of POAAN. The rates reflect the proposed label rate and 60% and 80% of the full recommended rate of Orkan 350 SL in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

Cherry orchards/VICCR

2 field trials were established in order to determine the minimum effective dose for the control of the cherry orchards/VICCR. Orkan 350 SL was tested at 5 to 8 L/ha in cherry orchards for the control of VICCR. The rates reflect the proposed label rate and 60% and 80% of the full recommended rate of Orkan 350 SL in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

Cherry orchards/CHEAL

2 field trials were established in order to determine the minimum effective dose for the control of the cherry orchards/CHEAL. Orkan 350 SL was tested at 5 to 8 L/ha in cherry orchards for the control of CHEAL. The rates reflect the proposed label rate and 60% and 80% of the full recommended rate of Orkan 350 SL in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

Comments of zRMS:	This is an Article 43 (of Reg. (EC) 1107/2009) application for the products ORKAN 350 SL/ SPRINTER 350 SL, following the renewal of the active substance glyphosate. Since this is an Article 43 application, it is inappropriate to consider new data or claims that are not directly required as part of the renewal of the active substance. Hence, with this application no new data or claims are considered. Also, this information's were assessed during first registration of ORKAN 350 SL / SPRINTER 350 SL. Applicant submitted new data for apple and cherries. However, according to 43 Article this data should not been assessed during renewal process. If the applicant wishes to make changes to the label or GAP table compared to an earlier registration (R-133/2016d) then he should apply for an extension of use in accordance with Article 33.

3.2.3 Efficacy tests (KCP 6.2)

The applicant submitted 12 efficacy trials (in total)) showing the results in research into product efficacy carried out in 2001 and 2018 in apple orchards (8 trials: 2 in 2001 and 6 in 2018) and cherry orchards (4 trials). This documentation is being written for renewal of product Orkan 350 SL. Orkan 350 SL was used for many years in orchards for the control of: *Echinochloa crus-gali, Stellaria media, Chenopodium album, Senecio vulgaris, Capsella-bursa-pastoris, Poa annua, Geranium pusillum, Taraxacum officinale, Elymus repens, Convolvulus arvensis, Polygonum aviculare, Equisetum arvense, Malva neglecta, Epilobium ciliatum.* This product is well known and successfully used for many years. Previous documentation was based on two trials conducted in 2000. Both trials showed high efficacy against *Echinochloa crus-galli, Elymus repens, Convolvulus arvensis, Polygonum aviculare, Equisetum arvense and Malva neglecta* in apple orchards.

List of these reports is contained in **Appendix 1.**
Trials were randomized block design and conducted in different regions in Poland.
The efficacy trials were designed, conducted and reported according to the following EPPO guidelines:
PP 1/152(4) Design and analysis of efficacy evaluation trials
PP 1/181(4) Conduct and reporting of efficacy evaluation trials including good experimental practice
PP 1/135(4) Phytotoxicity assessment
PP 1/225(2) Minimum effective dose

TRIAL:UNRS 6/2001/II/HERB.

Guidelines	General guidelines	EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2)
	Specific guidelines	EPPO PP 1/90 (3)
Experimental design	Plot design	Random Complete Block (RCB)
	Plot size	50 m²
	Number of replications	4
Crop	Trials per crop	Apple
	Varieties per crop	Idared/Antonówka
	Sowing period	1989
Application	Crop stage (BBCH)* at application	BBCH 71
	Timing Pest stage at application (1)	GERPU (BBCH 51) ARTVU (BBCH 39) ECHCG (BBCH 10-29) STEME (BBCH 35) LAMPU (BBCH 60-69) CHEAL (BBCH 16-19) MATIN (BBCH 51) TAROF (BBCH 71) CIRAR (BBCH 17) AGRRE (BBCH 40-49) URTDI (BBCH 22-34) CONAR (BBCH 51) POLAV (BBCH 60) MATMT (BBCH 12-19) EQUAR (BBCH 49) SENVU (BBCH 65) MALNE (BBCH 22-34) CAPBP (BBCH 60-65) POAAN (BBCH 30-59) EPICT (BBCH 12-22)

	Number of applications Intervals between applications	1
	Spray volumes	300 L/ha
Assessment	Assessment types	number of weeds/m², the visual efficacy of weed control for each individual weed in relation to the untreated plot (%)
	Assessment dates	28 DAT
Other relevant information	e.g. Soil type, pH (in case of soil active substance …)	deer soil, pH 6
	e.g. Natural / artificial innoculation…	natural
	e.g. Field / Greenhouse...	Orchard, Łęgajny/ prov. warmińsko-mazurskie (Poland)

Orkan 350 SL, similar to reference Chwastox Extra 300 SL+Roundup 360 SL, caused no phytotoxicity symptoms or changes in plant vigor.
Orkan 350 SL applied at rate 5.0 l/ha showed efficacy above 85% in control of *Echinochloa crus-galli, Stellaria media, Lamium purpureum, Chenopodium alba, Senecio vulgaris, Capsella bursa-pastoris* and *Poa annua*.
Orkan 350 SL applied at rate 5.0 l/ha showed efficacy between 70-85% in control of *Geranium pusillum, Artemisia vulgaris, Taraxacum officinale, Cirsium arvense, Elymus repens, Polygonum aviculare* and *Matricaria discoidea.*
Orkan 350 SL applied at rate 8.0 l/ha showed efficacy above 85% in control of *Geranium pusillum, Artemisia vulgaris, Tripleurospermum maritimum, Taraxacum officinale, Cirsium arvense, Elymus repens, Urtica dioica, Convolvulus arvensis, Polygonum aviculare, Matricaria discoidea, Equisetum arvense, Malva neglecta and Epilobium ciliatum.*

TRIAL:UNRS 9/2000/II/HERB.

Guidelines	General guidelines	EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2)
	Specific guidelines	EPPO PP 1/90 (3)
Experimental design	Plot design	Random Complete Block (RCB)
	Plot size	30 m²
	Number of replications	4
Crop	Trials per crop	Apple
	Varieties per crop	Wealthy/Antonówka
	Sowing period	1970
Application	Crop stage (BBCH)* at application	BBCH 74
	Timing Pest stage at application (1)	GERPU (BBCH 51) ECHCG (BBCH 39) STEME (BBCH 35) CHEAL (BBCH 19) TAROF (BBCH 71) AGRRE (BBCH 60-65) CONAR (BBCH 51) POLAV (BBCH 60) EQUAR (BBCH 65)

		SENVU (BBCH 65) MALNE (BBCH 39) CAPBP (BBCH 51) POAAN (BBCH 30-60) EPICT (BBCH 22-34)
	Number of applications Intervals between applications	1
	Spray volumes	300 L/ha
Assessment	Assessment types	number of weeds/m², the visual efficacy of weed control for each individual weed in relation to the untreated plot (%)
	Assessment dates	14 DAT, 28 DAT
Other relevant information	e.g. Soil type, pH (in case of soil active substance …)	deer soil, pH 6
	e.g. Natural / artificial innoculation…	natural
	e.g. Field / Greenhouse...	Orchard, Skierniewice/ prov. łódzkie (Poland)

Orkan 350 SL, similar to reference Chwastox Extra 300 SL+Roundup 360 SL, caused no phytotoxicity symptoms or changes in plant vigor.
Orkan 350 SL applied at rate 5.0 l/ha showed efficacy above 85% in control of *Echinochloa crus-galli, Stellaria media, Chenopodium alba, Senecio vulgaris, Capsella bursa-pastoris and Poa annua.*
Orkan 350 SL applied at rate 5.0 l/ha showed efficacy between 70-85% in control of *Geranium pusillum, Elymus repens, Polygonum aviculare* (efficacy in one replication was below 85%) and *Equisetum arvense.*
Orkan 350 SL applied at rates 7.0 l/ha and 9.0 l/ha showed efficacy above 85% in control of *Geranium pusillum, Taraxacum officinale, Elymus repens, Convolvulus arvensis, Polygonum aviculare, Equisetum arvense, Malva neglecta and Epilobium ciliatum.*

TRIAL:208_01_F19_346

Guidelines	General guidelines	EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2)
	Specific guidelines	EPPO PP 1/90 (3)
Experimental design	Plot design	Random Complete Block (RCB)
	Plot size	25 m²
	Number of replications	4
Crop	Trials per crop	Apple
	Varieties per crop	Ligol
	Sowing period	23.04.2007
Application	Crop stage (BBCH)* at application	BBCH 72-74
	Timing Pest stage at application (1)	TAROF (BBCH 19) EPICT (BBCH 32-35) SENVU (BBCH 12-18) STEME (BBCH 32-34) CAPBP (BBCH 32-33)

		POAAN (BBCH 23)
	Number of applications Intervals between applications	1
	Spray volumes	300 L/ha
Assessment	Assessment types	number of weeds/m², the visual efficacy of weed control for each individual weed in relation to the untreated plot (%)
	Assessment dates	14 DAT, 28 DAT, 56 DAT
Other relevant information	e.g. Soil type, pH (in case of soil active substance …)	Sandy loam, pH 6,4
	e.g. Natural / artificial innoculation…	natural
	e.g. Field / Greenhouse...	Orchard, Błędów/ prov. mazowieckie (Poland)

Orkan 350 SL, similar to reference Chwastox Extra 300 SL+Agrosar 360 SL and Kileo 400 SL, caused no phytotoxicity symptoms or changes in plant vigor.
Orkan 350 SL applied at rates 5.0 l/ha, 6.0 l/ha, 7.0 l/ha and 8.0 l/ha showed efficacy above 85% in control of Senecio vulgaris, Stellaria media, Capsella bursa-pastoris, Poa annua as well as reference Chwastox Extra 300 SL+Agrosar 360 SL at rates 2.5 l/ha+5.0 l/ha and Kileo 400 SL at rate 6.0 l/ha. Orkan 350 SL applied at rates 7.0 l/ha and 8.0 l/ha showed efficacy above 85% in control of Taraxacum officinale, as well as reference Chwastox Extra 300 SL+Agrosar 360 SL at rates 2.5 l/ha+5.0 l/ha and Kileo 400 SL at rate 6.0 l/ha. Orkan 350 SL applied at rate 8.0 l/ha showed efficacy above 85% in control of Epilobium cilliatum.
Orkan 350 SL applied at rate 6.0 l/ha showed efficacy between 70-85% in control of Taraxacum officinale. Orkan 350 SL applied at rates 6.0 l/ha, 7.0 l/ha showed efficacy between 70-85% in control of Epilobium cilliatum as well as reference Chwastox Extra 300 SL+Agrosar 360 SL at rates 2.5 l/ha+5.0 l/ha and Kileo 400 SL at rate 6.0 l/ha.
Orkan 350 SL aplied 5.0 l/ha showed efficacy between 60-70% in control of Taraxacum officinale and Epilobium cilliatum.
Assessments of beneficial organisms were not conducted due to low infestation levels.

TRIAL: 208_02_F19_347

Guidelines	General guidelines	EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2)
	Specific guidelines	EPPO PP 1/90 (3)
Experimental design	Plot design	Random Complete Block (RCB)
	Plot size	25 m²
	Number of replications	4
Crop	Trials per crop	Apple
	Varieties per crop	Prince
	Sowing period	
Application	Crop stage (BBCH)* at application	BBCH 71-73
	Timing Pest stage at application (1)	STEME (BBCH 16-29) TAROF (BBCH 21-23) EPICT (BBCH 12-18)

		ECHCG (BBCH 14-18) MATCH (BBCH 12-16) POAAN (BBCH 13-17) GALAP (BBCH 11-14)
	Number of applications Intervals between applications	1
	Spray volumes	300 L/ha
Assessment	Assessment types	number of weeds/m², the visual efficacy of weed control for each individual weed in relation to the untreated plot (%)
	Assessment dates	14 DAT, 28 DAT, 56 DAT
Other relevant information	e.g. Soil type, pH (in case of soil active substance …)	Sandy clay loam, pH 6,4
	e.g. Natural / artificial innoculation…	natural
	e.g. Field / Greenhouse...	Orchard, Nowy Regnów/ prov. mazowieckie (Poland)

No negative symptoms were found during mixing and sprayings of any of the product formulations applied in the trial.
Orkan 350 SL, similar to reference Chwastox Extra 300 SL+Agrosar 360 SL and Kileo 400 SL, caused no phytotoxicity symptoms or changes in plant vigor.
Orkan 350 SL applied at rates 5.0 l/ha, 6.0 l/ha, 7.0 l/ha, 8.0 l/ha showed efficacy above 85% in control of Taraxacum officinale, Poa annua, Galium aparine, Matricaria chamomilla, Echinochloa crus-galli, Stellaria media as well as reference Chwastox Extra 300 SL+Agrosar 360 SL at rates 2.5 l/ha+5.0 l/ha and Kileo 400 SL at rate 6.0 l/ha.
Assessments of beneficial organisms were not conducted due to low infestation levels.

TRIAL: 208_03_F19_348

Guidelines	General guidelines	EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2)
	Specific guidelines	EPPO PP 1/90 (3)
Experimental design	Plot design	Random Complete Block (RCB)
	Plot size	25 m²
	Number of replications	4
Crop	Trials per crop	Apple
	Varieties per crop	Red Jonaprince
	Sowing period	05.04.2014
Application	Crop stage (BBCH)* at application	BBCH 71-73
	Timing Pest stage at application (1)	STEME (BBCH 45-59) TAROF (BBCH 47-59) LAMPU (BBCH 51-59) EPICT (BBCH 51-59) CIRAR (BBCH 47-59) SENVU (BBCH 31-51) CAPBP (BBCH 47-59)

	Number of applications Intervals between applications	1
	Spray volumes	300 L/ha
Assessment	Assessment types	number of weeds/m², the visual efficacy of weed control for each individual weed in relation to the untreated plot (%)
	Assessment dates	14 DAT, 28 DAT, 56 DAT
Other relevant information	e.g. Soil type, pH (in case of soil active substance …)	Sandy clay loam, pH 6,2
	e.g. Natural / artificial innoculation…	natural
	e.g. Field / Greenhouse...	Orchard, Jasieniec/ prov. mazowieckie (Poland)

No negative symptoms were found during mixing and sprayings of any of the product formulations applied in the trial.
Orkan 350 SL, similar to reference Chwastox Extra 300 SL+Agrosar 360 SL and Kileo 400 SL, caused no phytotoxicity symptoms or changes in plant vigor.
Orkan 350 SL applied at rates 5.0 l/ha, 6.0 l/ha, 7.0 l/ha and 8.0 l/ha showed efficacy above 85% in control of Stellaria media, Senecio vulgaris, Capsella bursa-pastoris, as well as reference Chwastox Extra 300 SL+Agrosar 360 SL at rates 2.5 l/ha+5.0 l/ha and Kileo 400 SL at rate 6.0 l/ha. In control of Taraxacum officinale, Epilobium ciliatum, Lamium purpureum showed Orkan 350 SL applied at rates 7.0 l/ha, 8.0 l/ha, as well as reference Chwastox Extra 300 SL+Agrosar 360 SL at rates 2.5 l/ha+5.0 l/ha and Kileo 400 SL at rate 6.0 l/ha. In control of Cirsium arvense showed Orkan 350 SL applied at rate 8.0 l/ha.
Orkan 350 SL applied at rate 6.0 l/ha showed efficacy between 70-85% in control of Taraxacum officinale, Epilobium ciliatum and Lamium purpureum. Orkan 350 SL applied at rate 7.0 l/ha showed efficacy between 70-85% in control of Cirsium arvense as well as reference Chwastox Extra 300 SL+Agrosar 360 SL at rates 2.5 l/ha+5.0 l/ha and Kileo 400 SL at rate 6.0 l/ha.
Orkan 350 SL applied at rates 5.0 l/ha and 6.0 l/ha showed efficacy between 60-70% in control of Cirsium arvense.
Assessments of beneficial organisms were not conducted due to low infestation levels.

TRIAL: 208_04_F19_349

Guidelines	General guidelines	EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2)
	Specific guidelines	EPPO PP 1/90 (3)
Experimental design	Plot design	Random Complete Block (RCB)
	Plot size	25 m²
	Number of replications	4
Crop	Trials per crop	Apple
	Varieties per crop	Antonówka
	Sowing period	26.04.2004
Application	Crop stage (BBCH)* at application	BBCH 72-74
	Timing Pest stage at application (1)	STEME (BBCH 22-24) CHEAL (BBCH 14-16) CAPBP (BBCH 50-52)

		TAROF (BBCH 34-35) VERPE (BBCH 50-52) GALAP (BBCH 23-25) AGRRE (BBCH 50-52) ANTAR(BBCH 50-52)
	Number of applications Intervals between applications	1
	Spray volumes	300 L/ha
Assessment	Assessment types	number of weeds/m², the visual efficacy of weed control for each individual weed in relation to the untreated plot (%)
	Assessment dates	14 DAT, 28 DAT, 56 DAT
Other relevant information	e.g. Soil type, pH (in case of soil active substance …)	calcareous loamy sand, pH 7,2
	e.g. Natural / artificial innoculation…	natural
	e.g. Field / Greenhouse...	Orchard, Józefów nad Wisłą/ prov. lubelskie (Poland)

No negative symptoms were found during mixing and sprayings of any of the product formulations applied in the trial.
Orkan 350 SL, similar to reference Chwastox Extra 300 SL+Agrosar 360 SL and Kileo 400 SL, caused no phytotoxicity symptoms or changes in plant vigor.
Orkan 350 SL applied at rates 5.0 l/ha, 6.0 l/ha, 7.0 l/ha and 8.0 l/ha showed efficacy above 85% in control of Stellaria media, Chenopodium album, Capsella bursa-pastoris, Veronica persica, Gallium aparine, Anthemis arvensis as well as reference Chwastox Extra 300 SL+Agrosar 360 SL at rates 2.5 l/ha+5.0 l/ha and Kileo 400 SL at rate 6.0 l/ha. Orkan 350 SL applied at rates 5.0 l/ha and 6.0 l/ha showed efficacy above 85% in control of Taraxacum officinale and Elymus repens as well as reference Chwastox Extra 300 SL+Agrosar 360 SL at rates 2.5 l/ha+5.0 l/ha and KIleo 400 SL at rate 6.0 l/ha.
Orkan 350 SL applied at rates 5.0 l/ha and 6.0 l/ha showed efficacy between 70-85% in control of Taraxacum offcinale and Elymus repens.
Assessments of beneficial organisms were not conducted due to low infestation levels.

TRIAL: 208_05_F19_350

Guidelines	General guidelines	EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2)
	Specific guidelines	EPPO PP 1/90 (3)
Experimental design	Plot design	Random Complete Block (RCB)
	Plot size	25 m²
	Number of replications	4
Crop	Trials per crop	Apple
	Varieties per crop	Najdared
	Sowing period	20.04.2002
Application	Crop stage (BBCH)* at application	BBCH 69-72
	Timing Pest stage at	STEME (BBCH 39-51) EPICT (BBCH 47-55)

	application (1)	CHEAL (BBCH 42-59) SENVU (BBCH 49-59) CAPBP (BBCH 51-61) GERPU (BBCH 45-59) LAMPU (BBCH 42-55)
	Number of applications Intervals between applications	1
	Spray volumes	300 L/ha
Assessment	Assessment types	number of weeds/m², the visual efficacy of weed control for each individual weed in relation to the untreated plot (%)
	Assessment dates	14 DAT, 28 DAT, 56 DAT
Other relevant information	e.g. Soil type, pH (in case of soil active substance …)	Sandy loam, pH 6,0
	e.g. Natural / artificial innoculation…	natural
	e.g. Field / Greenhouse...	Orchard, Kocerany/ prov. mazowieckie (Poland)

No negative symptoms were found during mixing and sprayings of any of the product formulations applied in the trial.
Orkan 350 SL, similar to reference Chwastox Extra 300 SL+Agrosar 360 SL and Kileo 400 SL, caused no phytotoxicity symptoms or changes in plant vigor.
Orkan 350 SL applied at rates 5.0 l/ha, 6.0 l/ha, 7.0 l/ha, 8.0 l/ha showed efficacy above 85% in control of Stellaria media, Senecio vulgaris, Capsella bursa-pastoris as well as reference Chwastox Extra 300 SL+Agrosar 360 SL at rates 2.5 l/ha+5.0 l/ha and Kileo 400 SL at rate 6.0 l/ha. Orkan 350 SL applied at rates 6.0 l/ha, 7.0 l/ha, 8.0 l/ha showed efficacy above 85% in control of Geranium pusillum as well as reference Chwastox Extra 300 SL+Agrosar 360 SL at rates 2.5 l/ha+5.0 l/ha and Kileo 400 SL at rate 6.0 l/ha. Orkan 350 SL applied at rates 7.0 l/ha, 8.0 l/ha showed efficacy above 85% in control of Epilobium ciliatum and Chenopodium album showed, as well as reference Chwastox Extra 300 SL+Agrosar 360 SL at rates 2.5 l/ha+5.0 l/ha and Kileo 400 SL at rate 6.0 l/ha. Orkan 350 SL applied at rate 8.0 l/ha showed efficacy above 85% in control of Lamium purpureum showed as well as reference Chwastox Extra 300 SL+Agrosar 360 SL at rates 2.5 l/ha+5.0 l/ha and Kileo 400 SL at rate 6.0 l/ha.
Orkan 350 SL applied at rates 5.0 l/ha and 6.0 l/ha showed efficacy between 70-85% in control of Chenopodium album. Orkan 350 SL applied at rate 6.0 l/ha showed efficacy between 70-85% in control of Epilobium ciliatum. Orkan 350 SL applied at rate 7.0 l/ha showed efficacy between 70-85% in control of Lamium purpureum. Orkan 350 SL applied at rate 5.0 l/ha showed efficacy between 70-85% in control of Garanium pusillum.
Orkan 350 SL applied at rate 5.0 l/ha showed efficacy between 60-70% in control of Epilobium ciliatum. Orkan 350 SL applied at rates 5.0 l/ha and 6.0 l/ha showed efficacy between 60-70% in control of Lamium purpureum showed.
Assessments of beneficial organisms were not conducted due to low infestation levels.

TRIAL: 208_06_F19_351

Guidelines	General guidelines	EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2)
	Specific guidelines	EPPO PP 1/90 (3)
Experimental design	Plot design	Random Complete Block (RCB)
	Plot size	25 m²

	Number of replications	4
Crop	Trials per crop	Apple
	Varieties per crop	Szara Reneta
	Sowing period	08.09.2014
Application	Crop stage (BBCH)* at application	BBCH 71
	Timing Pest stage at application (1)	STEME (BBCH 20-23) TAROF (BBCH 23-26) CONAR (BBCH 15-22) EPICT (BBCH 42-47) CHEAL (BBCH 18-22) GALAP (BBCH 14-18) URTDU (BBCH 27-35) GERPU (BBCH 22-26) LAMPU (BBCH 42-55)
	Number of applications Intervals between applications	1
	Spray volumes	300 L/ha
Assessment	Assessment types	number of weeds/m², the visual efficacy of weed control for each individual weed in relation to the untreated plot (%)
	Assessment dates	14 DAT, 28 DAT, 56 DAT
Other relevant information	e.g. Soil type, pH (in case of soil active substance …)	calcareous loamy sand, pH 6,5
	e.g. Natural / artificial innoculation…	natural
	e.g. Field / Greenhouse...	Orchard, Krzywiń/ prov. wielkopolskie (Poland)

No negative symptoms were found during mixing and sprayings of any of the product formulations applied in the trial.
Orkan 350 SL, similar to reference Chwastox Extra 300 SL+Agrosar 360 SL and Kileo 400 SL, caused no phytotoxicity symptoms or changes in plant vigor.
Orkan 350 SL applied at rates 5.0 l/ha, 6.0 l/ha, 7.0 l/ha, 8.0 l/ha showed efficacy above 85% in control of Stellaria media, Chenopodium album, Gallium aparine, Urtica dioica efficacy as well as reference products Chwastox Extra 300 SL+Agrosar 360 SL at rates 2.5 l/ha+5.0 l/ha and Kileo 400 SL at rate 6.0 l/ha.
Orkan 350 SL applied at rate 8.0 l/ha showed efficacy above 85% in control of Taraxacum officinale, Convolvulus arvensis, Epilobium ciliatum showed. Orkan 350 SL applied at rates 7.0 l/ha and 8.0 l/ha showed efficacy above 85% in control of Geranium pusillum, as well as reference Chwastox Extra 300 SL+Agrosar 360 SL at rates 2.5 l/ha+5.0 l/ha and Kileo 400 SL at rate 6.0 l/ha.
Orkan 350 SL applied at rates 7.0 l/ha and 6.0 l/ha showed efficacy between 70-85% in control of Taraxacum officinale, Epilobium cillatum, Convolvulus arvensis, as well as reference Chwastox Extra 300 SL+Agrosar 360 SL at rates 2.5 l/ha+5.0 l/ha and Kileo 400 SL at rate 6.0 l/ha. Orkan 350 SL applied at rate 6.0 l/ha showed efficacy between 70-85% in control of Garanium pusillum showed.
Orkan 350 SL applied at rate 5.0 l/ha showed efficacy between 60-70% in control of Geranium pusillum, Taraxacum officinale, Convulvulus arvensis.
Assessments of beneficial organisms were not conducted due to low infestation levels.

TRIAL: 210_01_F19_356

Guidelines	General guidelines	EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2)
	Specific guidelines	EPPO PP 1/90 (3)
Experimental design	Plot design	Random Complete Block (RCB)
	Plot size	25 m²
	Number of replications	4
Crop	Trials per crop	Cherry
	Varieties per crop	Łutówka
	Sowing period	14.04.2010
Application	Crop stage (BBCH)* at application	BBCH 72-75
	Timing Pest stage at application (1)	STEME (BBCH 18-22) TAROF (BBCH 22-24) EPICT (BBCH 18-21) LAMPU (BBCH 27-31) POAAN (BBCH 16-18) VICCR (BBCH 21-24) VIOAR (BBCH 15-18)
	Number of applications Intervals between applications	1
	Spray volumes	300 L/ha
Assessment	Assessment types	number of weeds/m², the visual efficacy of weed control for each individual weed in relation to the untreated plot (%)
	Assessment dates	14 DAT, 28 DAT, 56 DAT
Other relevant information	e.g. Soil type, pH (in case of soil active substance …)	sandy clay loam, pH 6,2
	e.g. Natural / artificial innoculation…	natural
	e.g. Field / Greenhouse...	Orchard, Sadkowice/ prov. łódzkie (Poland)

No negative symptoms were found during mixing and sprayings of any of the product formulations applied in the trial.
Orkan 350 SL, similar to reference Chwastox Extra 300 SL+Agrosar 360 SL and Kileo 400 SL, caused no phytotoxicity symptoms or changes in plant vigor.
Orkan 350 SL applied at rates 5.0 l/ha, 6.0 l/ha, 7.0 l/ha and 8.0 l/ha showed efficay above 85% Ii control of Poa annua, Stellaria media, Vicia cracca, Lamium purpureum as well as reference Chwastox Extra 300 SL+Agrosar 360 SL at rates 2.5 l/ha+5.0 l/ha and Kileo 400 SL at rate 6.0 l/ha. Orkan 350 SL applied at rates 7.0 l/ha and 8.0 l/ha showed efficacy above 85% in control of Taraxacum officinale, Epilobium ciliatum as well as reference Chwastox Extra 300 SL+Agrosar 360 SL at rates 2.5 l/ha+5.0 l/ha and Kileo 400 SL at rate 6.0 l/ha. Orkan 350 SL applied at rates 6.0 l/ha, 7.0 l/ha and 8.0 l/ha showed efficacy above 85% in control of Viola arvensis, as well as reference Chwastox Extra 300 SL+Agrosar 360 SL at rates 2.5 l/ha+5.0 l/ha and Kileo 400 SL at rate 6.0 l/ha.
Orkan 350 Sl applied at rates 5.0 l/ha and 6.0 l/ha showed efficacy between 70-85 in control of Taraxacum officinale, Epilobium ciliatum. Orkan 350 SL applied at rate 5.0 l/ha showed efficacy between 70-85% in control of Viola arvensis showed Orkan 350 SL applied at rate 5.0 l/ha.
Assessments of beneficial organisms were not conducted due to low infestation levels.

TRIAL: 210_02_F19_357

Guidelines	General guidelines	EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2)
	Specific guidelines	EPPO PP 1/90 (3)
Experimental design	Plot design	Random Complete Block (RCB)
	Plot size	20 m²
	Number of replications	4
Crop	Trials per crop	Cherry
	Varieties per crop	Łutówka
	Sowing period	20.04.2005
Application	Crop stage (BBCH)* at application	BBCH 72-75
	Timing Pest stage at application (1)	STEME (BBCH 32-51) TAROF (BBCH 19) EPICT (BBCH 19-35) ECHCG (BBCH 21-31) CHEAL (BBCH 31-33) SENVU (BBCH 13-18) POAAN (BBCH 22-31)
	Number of applications Intervals between applications	1
	Spray volumes	300 L/ha
Assessment	Assessment types	number of weeds/m², the visual efficacy of weed control for each individual weed in relation to the untreated plot (%)
	Assessment dates	14 DAT, 28 DAT, 56 DAT
Other relevant information	e.g. Soil type, pH (in case of soil active substance …)	sandy loam, pH 6,2
	e.g. Natural / artificial innoculation…	natural
	e.g. Field / Greenhouse...	Orchard, Jasieniec/ prov. mazowieckie (Poland)

No negative symptoms were found during mixing and sprayings of any of the product formulations applied in the trial.
Orkan 350 SL, similar to reference Chwastox Extra 300 SL+Agrosar 360 SL and Kileo 400 SL, caused no phytotoxicity symptoms or changes in plant vigor.
Orkan 350 SL applied at rates 5.0 l/ha, 6.0 l/ha, 7.0 l/ha and 8.0 l/ha showed efficacy above 85% in control of Stellaria media, Taraxacum officinale, Epilobium ciliatum, Echinochloa crus-galli, Chenopodium album, Senecio vulgaris, Poa annua as well as reference products Chwastox Extra 300 SL+Agrosar 360 SL at rates 2.5 l/ha+5.0 l/ha and Kileo 400 SL at rate 6.0 l/ha.
Assessments of beneficial organisms were not conducted due to low infestation levels.

TRIAL: 210_03_F19_358

Guidelines	General guidelines	EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2)

	Specific guidelines	EPPO PP 1/90 (3)
Experimental design	Plot design	Random Complete Block (RCB)
	Plot size	25 m²
	Number of replications	4
Crop	Trials per crop	Cherry
	Varieties per crop	Łutówka
	Sowing period	25.04.2007
Application	Crop stage (BBCH)* at application	BBCH 72-74
	Timing Pest stage at application (1)	STEME (BBCH 39-59) TAROF (BBCH 45-59) EPICT (BBCH 51-59) SENVU (BBCH 31-51) CAPBP (BBCH 51-59) POAAN (BBCH 13-39) VICCR (BBCH 23-51)
	Number of applications Intervals between applications	1
	Spray volumes	300 L/ha
Assessment	Assessment types	number of weeds/m², the visual efficacy of weed control for each individual weed in relation to the untreated plot (%)
	Assessment dates	14 DAT, 28 DAT, 56 DAT
Other relevant information	e.g. Soil type, pH (in case of soil active substance …)	sandy loam, pH 6,2
	e.g. Natural / artificial innoculation…	natural
	e.g. Field / Greenhouse...	Orchard, Rawa Mazowiecka/ prov. łódzkie (Poland)

No negative symptoms were found during mixing and sprayings of any of the product formulations applied in the trial.
Orkan 350 SL, similar to reference Chwastox Extra 300 SL+Agrosar 360 SL and Kileo 400 SL, caused no phytotoxicity symptoms or changes in plant vigor.
Orkan 350 SL applied at rates 5.0 l/ha, 6.0 l/ha, 7.0 l/ha, 8.0 l/ha showed efficacy above 85% in control of Stellaria media, Senecio vulgaris, Capsella bursa-pastoris, Poa annua, Vicia cracca, as well as reference Chwastox Extra 300 SL+Agrosar 360 SL at rates 2.5 l/ha+5.0 l/ha and Kileo 400 SL at rate 6.0 l/ha. Orkan 350 SL applied at rates 7.0 l/ha and 8.0 l/ha showed efficacy above 85% in control of Taraxacum officinale as well as reference Chwastox Extra 300 SL+Agrosar 360 SL at rates 2.5 l/ha+5.0 l/ha and Kileo 400 SL at rate 6.0 l/ha. Orkan 350 SL applied at rate 8.0 l/ha showed efficacy above 85% in control of Epilobium ciliatum, as well as reference Chwastox Extra 300 SL+Agrosar 360 SL at rates 2.5 l/ha+5.0 l/ha and Kileo 400 SL at rate 6.0 l/ha.
Orkan 350 SL applied at rates 5.0 l/ha and 6.0 l/ha showed efficacy between 70-85% in control of Taraxacum officinale Orkan 350 SL applied at rates 6.0 l/ha and 7.0 l/ha showed efficacy between 70-85% in control of Epilobium ciliatum.
Orkan 350 SL applied at rate 5.0 l/ha showed efficacy between 60-70% in control of Epilobium ciliatum.
Assessments of beneficial organisms were not conducted due to low infestation levels.

TRIAL: 210_04_F19_359

Guidelines	General guidelines	EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2)
	Specific guidelines	EPPO PP 1/90 (3)
Experimental design	Plot design	Random Complete Block (RCB)
	Plot size	30 m²
	Number of replications	4
Crop	Trials per crop	Cherry
	Varieties per crop	Łutówka
	Sowing period	26.04.2005
Application	Crop stage (BBCH)* at application	BBCH 73-76
	Timing Pest stage at application (1)	CHEAL (BBCH 19-21) GALAP (BBCH 14-18) STEME (BBCH 20-23) GERPU (BBCH 22-26) ANTAR (BBCH 14-18) TAROF (BBCH 23-26) URTDI (BBCH 27-35)
	Number of applications Intervals between applications	1
	Spray volumes	300 L/ha
Assessment	Assessment types	number of weeds/m², the visual efficacy of weed control for each individual weed in relation to the untreated plot (%)
	Assessment dates	14 DAT, 28 DAT, 56 DAT
Other relevant information	e.g. Soil type, pH (in case of soil active substance …)	sandy loam, pH 6,2
	e.g. Natural / artificial innoculation…	natural
	e.g. Field / Greenhouse...	Orchard, Kościan/ prov. wielkopolskie (Poland)

No negative symptoms were found during mixing and sprayings of any of the product formulations applied in the trial.
Orkan 350 SL, similar to reference Chwastox Extra 300 SL+Agrosar 360 SL and Kileo 400 SL, caused no phytotoxicity symptoms or changes in plant vigor.
Orkan 350 SL applied at rates 5.0 l/ha, 6.0 l/ha, 7.0 l/ha, 8.0 l/ha showed efficacy above 85% In control of Chenopodium album, Galium aparine, Stellaria media, Geranium pusilium, Taraxacum officinale, as well as reference Chwastox Extra 300 SL+Agrosar 360 SL at rates 2.5 l/ha+5.0 l/ha and Kileo 400 SL at rate 6.0 l/ha. Orkan 350 SL applied at rate 8.0 l/ha showed efficacy above 85% in control of Anthemis arvensis, as well as reference Chwastox Extra 300 SL+Agrosar 360 SL at rates 2.5 l/ha+5.0 l/ha. Orkan 350 SL applied at rates 8.0 l/ha, 7.0 l/ha, 6.0 l/ha showed efficay above 85% In control of Urtica dioica, as well as reference Kileo 400 SL at rate 6.0 l/ha.
Orkan 350 SL applied at rate 5.0 l/ha showed efficacy betwen 70-85% in control of Urtica dioica, as well as reference Chwastox Extra 300 SL+Agrosar 360 SL at rates 2.5 l/ha+5.0 l/ha. Orkan 350 SL applied at rates 7.0 l/ha, 6.0 l/ha, 5.0 l/ha showed efficacy between 70-85% in control of Anthemis arvensis, as well as reference Kileo 400 SL at rate 6.0 l/ha.

Assessments of beneficial organisms were not conducted due to low infestation levels.

APPLE Orchards/TAROF

Table 3.2-7: Efficacy of Orkan 350 SL in all trials (TAROF).

	Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL				
Trial number	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
208_01_F19_346	8 L/ha	9,5	72,5	91,3	90	2,5L/ha + 5 L/ha	7,5	71,3	90	90
	7 L/ha	8	70	90	90	Kileo 400 SL				
	6 L/ha	9	67,5	80	77,5	6 L/ha	8	71,3	90	90
	5 L/ha	8,5	66,3	71,3	67,5	Chwastox Extra 300 SL + Agrosar 360 SL				
208_02_F19_347	8 L/ha	5	80	92,5	95	2,5L/ha + 5 L/ha	5	80	91,25	95
	7 L/ha	5	73,75	90	93,75					
	6 L/ha	5	72,5	85	90	Kileo 400 SL				
	5 L/ha	5	63,75	80	85	6 L/ha	5	82,5	91,25	95
208_03_F19_348	8 L/ha	14,8	72,5	90	95	Chwastox Extra 300 SL + Agrosar 360 SL				
	7 L/ha	16,3	66,3	82,5	87,5	2,5L/ha + 5 L/ha	14,8	77,5	92,5	95
	6 L/ha	12	57,5	72,5	82,5	Kileo 400 SL				
	5 L/ha	16,8	50	68,8	71,3	6 L/ha	15,5	73,8	93,8	95
208_04_F19_349	8 L/ha	10	83,8	95	95	Chwastox Extra 300 SL + Agrosar 360 SL				
	7 L/ha	10	82,5	93,8	95	2,5L/ha + 5 L/ha	10	83,8	93,8	95
	6 L/ha	10	80	81,3	83,8	Kileo 400 SL				
	5 L/ha	10	78,8	78,8	78,8	6 L/ha	10	78,8	92,5	95
208_06_F19_351	8 L/ha	3	70	91,3	87,5	Chwastox Extra 300 SL + Agrosar 360 SL				
	7 L/ha	3,3	70	87,5	83,8	2,5L/ha + 5 L/ha	3	75	88,8	83,8
	6 L/ha	3	62,5	73,8	75	Kileo 400 SL				
	5 L/ha	2,8	60	67,5	61,3	6 L/ha	3,3	71,3	90	82,5

A total of 5 trials were carried out to evaluate the efficacy of Orkan 350 SL for the control of TAROF in apple orchards. Trials were conducted in different regions in Poland where orchards are grown commercially. Trials were made of randomized block design with a minimum of four replicates. The trials were performed with the use of different apple cultivars, differing in growth strength as well as soil and water requirements. Orkan 350 SL was applied at dose rates: 8 L/ha, 7 L/ha, 6 L/ha and 5 L/ha. As a standards were used Kileo 400 SL at dose 6 L/ha and Chwastox Extra 300 SL+ Agrosar 360 SL at dose 2,5 L/ha + 5 L/ha. These studies were described in compliance with the principles of Good Experimental Practice (GEP) while the test results were summarize in appropriate Tables (see attachment No. 3.2-11a and No. 3.2-11b).

Table 3.2-8a: Average efficacy of Orkan 350 SL (TAROF).

Average efficacy									
Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL				
dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
8 L/ha	8,46	75,76	92,02	92,5	2,5L/ha + 5 L/ha	8,06	77,52	91,27	91,76

7 L/ha	8,52	72,51	88,76	90,01	Kileo 400 SL				
6 L/ha	7,8	68	78,52	81,76	6 L/ha	8,36	75,54	91,51	91,5
5 L/ha	8,62	63,77	73,28	72,78					

Table 3.2-9b: Summary of average efficacy 14-56 DAT of Orkan 350 SL (TAROF).

Average efficacy 14-56 DAT			
5 L/ha	6 L/ha	7 L/ha	8 L/ha
69,94333	76,09333	83,76	86,76

Summary and conclusion (TAROF)
Orkan 350 SL at dose 8 L/ha significantly reduced occurrence of TAROF in apple orchards. At dose 8 L/ha average efficacy 14-56 DAT reached 86,76 %. There was no significant different between Orkan 350 SL and standard herbicides (Kileo 400 SL and Chwastox Extra 300 SL+ Agrosar 360 SL). To significantly reduce TAROF recommended dose of Orkan 350 SL is 8 L/ha.

APPLE Orchards/EPICT

Table 3.2-12: Efficacy of Orkan 350 SL in all trials (EPICT).

	Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL				
Trial number	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
208_01_F19_346	8 L/ha	9,3	78,8	92,5	87,5	2,5L/ha + 5 L/ha	9,3	76,3	85	82,5
	7 L/ha	8,5	76,3	82,5	77,5	Kileo 400 SL				
	6 L/ha	6,3	71,3	73,8	70	6 L/ha	6,8	77,5	85	83,8
	5 L/ha	6,8	67,5	68,8	65	Chwastox Extra 300 SL + Agrosar 360 SL				
208_02_F19_347	8 L/ha	8,75	83,8	95	95	2,5L/ha + 5 L/ha	8,75	83,8	95	95
	7 L/ha	8,75	81,3	93,8	95					
	6 L/ha	8,75	73,8	90	90	Kileo 400 SL				
	5 L/ha	7,5	70	88,8	90	6 L/ha	8,75	82,5	95	95
208_03_F19_348	8 L/ha	6	67,5	91,3	90	Chwastox Extra 300 SL + Agrosar 360 SL				
	7 L/ha	6,8	65	85	85	2,5L/ha + 5 L/ha	6	68,8	83,8	91,3
	6 L/ha	6,8	61,3	78,8	77,5	Kileo 400 SL				
	5 L/ha	6	51,3	68,8	70	6 L/ha	6	72,5	82,5	90
208_05_F19_350	8 L/ha	6	67,5	86,3	87,5	Chwastox Extra 300 SL + Agrosar 360 SL				
	7 L/ha	5,3	63,8	83,8	85	2,5L/ha + 5 L/ha	3,8	72,5	85	85
	6 L/ha	6	60	78,8	70	Kileo 400 SL				
	5 L/ha	5,3	55	57,5	67,5	6 L/ha	6	72,5	85	87,5
208_06_F19_351	8 L/ha	2,5	73,8	91,3	90	Chwastox Extra 300 SL + Agrosar 360 SL				
	7 L/ha	2	72,5	86,3	83,8	2,5L/ha + 5 L/ha	2,5	73,8	87,5	81,3
	6 L/ha	2	62,5	72,5	71,3	Kileo 400 SL				
	5 L/ha	2,5	52,5	65	62,5	6 L/ha	2,3	70	86,3	81,3

A total of 5 trials were carried out to evaluate the efficacy of Orkan 350 SL for the control of EPICT in

apple orchards. Trials were conducted in different regions in Poland where orchards are grown commercially. Trials were made of randomized block design with a minimum of four replicates. The trials were performed with the use of different apple cultivars, differing in growth strength as well as soil and water requirements. Orkan 350 SL was applied at dose rates: 8 L/ha, 7 L/ha, 6 L/ha and 5 L/ha. As a standards were used Kileo 400 SL at dose 6 L/ha and Chwastox Extra 300 SL+ Agrosar 360 SL at dose 2,5 L/ha + 5 L/ha. These studies were described in compliance with the principles of Good Experimental Practice (GEP) while the test results were summarize in appropriate Tables (see attachment No. 3.2-12a and No. 3.2-12b).

Table 3.2-12a: Average efficacy of Orkan 350 SL (EPICT).

Average efficacy									
Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL				
dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
8 L/ha	6,51	74,28	91,28	90	2,5L/ha + 5 L/ha	6,07	75,04	87,26	87,02
7 L/ha	6,27	71,78	86,28	85,26	Kileo 400 SL				
6 L/ha	5,97	65,78	78,78	75,76	6 L/ha	5,97	75	86,76	87,52
5 L/ha	5,62	59,26	69,78	71					

Table 3.2-12b: Summary of average efficacy 14-56 DAT of Orkan 350 SL (EPICT).

Average efficacy 14-56 DAT			
5 L/ha	6 L/ha	7 L/ha	8 L/ha
66,68	73,44	81,11	85,19

Summary and conclusion (EPICT)

Orkan 350 SL at dose 8 L/ha significantly reduced occurrence of EPICT in apple orchards. At dose 8 L/ha average efficacy 14-56 DAT reached 85,19 %. There was no significant different between Orkan 350 SL and standard herbicides (Kileo 400 SL and Chwastox Extra 300 SL+ Agrosar 360 SL). To significantly reduce EPICT recommended dose of Orkan 350 SL is 8 L/ha.

APPLE Orchards/SENVU

Table 3.2-13: Efficacy of Orkan 350 SL in all trials (SENVU).

	Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL				
Trial number	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
208_01_F19_346	8 L/ha	5	90	99	99	2,5L/ha + 5 L/ha	5	90	99	99
	7 L/ha	5	90	99	99	Kileo 400 SL				
	6 L/ha	5	90	99	99	6 L/ha	5	90	99	99
	5 L/ha	5	90	99	99	Chwastox Extra 300 SL + Agrosar 360 SL				
208_03_F19_348	8 L/ha	6,8	99	99	99	2,5L/ha + 5 L/ha	6,8	99	99	99
	7 L/ha	9	99	99	99					
	6 L/ha	7,5	99	99	99	Kileo 400 SL				
	5 L/ha	6,8	92,5	99	99	6 L/ha	7,5	99	99	99
208_05_F19_350	8 L/ha	10,5	99	99	99	Chwastox Extra 300 SL + Agrosar 360 SL				

	7 L/ha	7,5	99	99	99	2,5L/ha + 5 L/ha	7,5	99	99	99
	6 L/ha	9	98	99	99	Kileo 400 SL				
	5 L/ha	10,5	91,3	98	99	6 L/ha	8,3	99	99	99

A total of 3 trials were carried out to evaluate the efficacy of Orkan 350 SL for the control of SENVU in apple orchards. Trials were conducted in different regions in Poland where orchards are grown commercially. Trials were made of randomized block design with a minimum of four replicates. The trials were performed with the use of different apple cultivars, differing in growth strength as well as soil and water requirements. Orkan 350 SL was applied at dose rates: 8 L/ha, 7 L/ha, 6 L/ha and 5 L/ha. As a standards were used Kileo 400 SL at dose 6 L/ha and Chwastox Extra 300 SL+ Agrosar 360 SL at dose 2,5 L/ha + 5 L/ha. These studies were described in compliance with the principles of Good Experimental Practice (GEP) while the test results were summarize in appropriate Tables (see attachment No. 3.2-13a and No. 3.2-13b).

Table 3.2-13a: Average efficacy of Orkan 350 SL (SENVU).

Average efficacy									
Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL				
dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
8 L/ha	7,43	96	99	99	2,5L/ha + 5 L/ha	6,43	96	99	99
7 L/ha	7,17	96	99	99	Kileo 400 SL				
6 L/ha	7,17	95,67	99	99	6 L/ha	6,93	96	99	99
5 L/ha	7,43	91,27	98,67	99					

Table 3.2-13b: Summary of average efficacy 14-56 DAT of Orkan 350 SL (SENVU).

Average efficacy 14-56 DAT			
5 L/ha	6 L/ha	7 L/ha	8 L/ha
96,31	97,89	98	98

Summary and conclusion (SENVU)
Orkan 350 SL at dose 5 L/ha significantly reduced occurrence of SENVU in apple orchards. At dose 5 L/ha average efficacy 14-56 DAT reached 96,31 %. There was no significant different between Orkan 350 SL and standard herbicides (Kileo 400 SL and Chwastox Extra 300 SL+ Agrosar 360 SL). To significantly reduce SENVU recommended dose of Orkan 350 SL is 5 L/ha.

APPLE Orchards/STEME

Table 3.2-14: Efficacy of Orkan 350 SL in all trials (STEME).

	Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL				
Trial number	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
208_01_F19_346	8 L/ha	17,5	90	99	99	2,5L/ha + 5 L/ha	17,5	90	99	99
	7 L/ha	16,3	90	99	99	Kileo 400 SL				
	6 L/ha	18,8	90	99	99	6 L/ha	16,3	90	99	99
	5 L/ha	17,5	90	99	99	Chwastox Extra 300 SL + Agrosar 360 SL				
208_02_F19_347	8 L/ha	11,25	88,8	95	95	2,5L/ha	12,5	90	95	95

	7 L/ha	8,75	87,5	95	95	+ 5 L/ha				
	6 L/ha	11,25	85	90	90	Kileo 400 SL				
	5 L/ha	13,75	83,8	88,8	90	6 L/ha	12,5	90	95	95
208_03_F19_348	8 L/ha	7,5	99	99	99	Chwastox Extra 300 SL + Agrosar 360 SL				
	7 L/ha	9,8	93,8	99	99	2,5L/ha + 5 L/ha	6	99	99	99
	6 L/ha	6,8	90	98	99	Kileo 400 SL				
	5 L/ha	7,5	90	94,8	97	6 L/ha	6,8	99	99	99
208_04_F19_349	8 L/ha	30	95	95	90	Chwastox Extra 300 SL + Agrosar 360 SL				
	7 L/ha	25	95	95	90	2,5L/ha + 5 L/ha	25	95	95	92,5
	6 L/ha	25	95	95	90	Kileo 400 SL				
	5 L/ha	30	95	95	90	6 L/ha	27,5	95	95	92,5
208_05_F19_350	8 L/ha	10,5	99	99	99	Chwastox Extra 300 SL + Agrosar 360 SL				
	7 L/ha	10,5	99	99	99	2,5L/ha + 5 L/ha	9,8	99	99	99
	6 L/ha	8,3	92,5	98	99	Kileo 400 SL				
	5 L/ha	9	90	95,8	99	6 L/ha	9,8	99	99	99
208_06_F19_351	8 L/ha	5,8	95	99	99	Chwastox Extra 300 SL + Agrosar 360 SL				
	7 L/ha	5,8	95	99	99	2,5L/ha + 5 L/ha	5,8	95	99	99
	6 L/ha	5,3	95	99	99	Kileo 400 SL				
	5 L/ha	5,5	95	99	99	6 L/ha	5,5	95	99	99

A total of 6 trials were carried out to evaluate the efficacy of Orkan 350 SL for the control of STEME in apple orchards. Trials were conducted in different regions in Poland where orchards are grown commercially. Trials were made of randomized block design with a minimum of four replicates. The trials were performed with the use of different apple cultivars, differing in growth strength as well as soil and water requirements. Orkan 350 SL was applied at dose rates: 8 L/ha, 7 L/ha, 6 L/ha and 5 L/ha. As a standards were used Kileo 400 SL at dose 6 L/ha and Chwastox Extra 300 SL+ Agrosar 360 SL at dose 2,5 L/ha + 5 L/ha. These studies were described in compliance with the principles of Good Experimental Practice (GEP) while the test results were summarize in appropriate Tables (see attachment No. 3.2-14a and No. 3.2-14b).

Table 3.2-14a: Average efficacy of Orkan 350 SL (STEME).

Average efficacy									
Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL				
dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
8 L/ha	13,76	94,47	97,67	96,83	2,5L/ha + 5 L/ha	12,77	94,67	97,67	97,25
7 L/ha	12,69	93,38	97,67	96,83	Kileo 400 SL				
6 L/ha	12,58	91,25	96,50	96,00	6 L/ha	10,18	94,60	98,20	98,20
5 L/ha	13,88	90,63	95,40	95,67					

Table 3.2-14b: Summary of average efficacy 14-56 DAT of Orkan 350 SL (STEME).

Average efficacy 14-56DAT			
5 L/ha	6 L/ha	7 L/ha	8 L/ha
93,90	94,58	95,96	96,32

Summary and conclusion (STEME)

Orkan 350 SL at dose 5 L/ha significantly reduced occurrence of STEME in apple orchards. At dose 5 L/ha average efficacy 14-56 DAT reached 93,9 %. There was no significant different between Orkan 350 SL and standard herbicides (Kileo 400 SL and Chwastox Extra 300 SL+ Agrosar 360 SL). To significantly reduce STEME recommended dose of Orkan 350 SL is 5 L/ha.

APPLE Orchards/CAPBP

Table 3.2-15: Efficacy of Orkan 350 SL in all trials (CAPBP).

	Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL				
Trial number	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
208_01_F19_346	8 L/ha	5	90	99	99	2,5L/ha + 5 L/ha	5	90	99	99
	7 L/ha	5	90	99	99	Kileo 400 SL				
	6 L/ha	5	90	99	99	6 L/ha	5	90	99	99
	5 L/ha	5	90	99	99	Chwastox Extra 300 SL + Agrosar 360 SL				
208_03_F19_348	8 L/ha	15,5	99	99	99	2,5L/ha + 5 L/ha	14,8	99	99	99
	7 L/ha	11,3	99	99	99					
	6 L/ha	16,3	95	97	99	Kileo 400 SL				
	5 L/ha	12	91,3	95	99	6 L/ha	18	99	99	99
208_04_F19_349	8 L/ha	5	95	95	95	Chwastox Extra 300 SL + Agrosar 360 SL				
	7 L/ha	5	95	95	95	2,5L/ha + 5 L/ha	5	92,5	92,5	95
	6 L/ha	5	95	95	95	Kileo 400 SL				
	5 L/ha	6,3	91,3	91,3	95	6 L/ha	5	95	95	95
208_05_F19_350	8 L/ha	8,3	99	99	99	Chwastox Extra 300 SL + Agrosar 360 SL				
	7 L/ha	6,8	99	99	99	2,5L/ha + 5 L/ha	6	99	99	99
	6 L/ha	8,3	96	99	99	Kileo 400 SL				
	5 L/ha	6	91,3	95	99	6 L/ha	6	99	99	99

A total of 4 trials were carried out to evaluate the efficacy of Orkan 350 SL for the control of CAPBP in apple orchards. Trials were conducted in different regions in Poland where orchards are grown commercially. Trials were made of randomized block design with a minimum of four replicates. The trials were performed with the use of different apple cultivars, differing in growth strength as well as soil and water requirements. Orkan 350 SL was applied at dose rates: 8 L/ha, 7 L/ha, 6 L/ha and 5 L/ha. As a standards were used Kileo 400 SL at dose 6 L/ha and Chwastox Extra 300 SL+ Agrosar 360 SL at dose 2,5 L/ha + 5 L/ha. These studies were described in compliance with the principles of Good Experimental Practice (GEP) while the test results were summarize in appropriate Tables (see attachment No. 3.2-15a and No. 3.2-15b).

Table 3.2-15a: Average efficacy of Orkan 350 SL (CAPBP).

Average efficacy									
Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL				
dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
8 L/ha	8,45	95,75	98,00	98,00	2,5L/ha + 5 L/ha	7,70	95,13	97,38	98,00
7 L/ha	7,03	95,75	98,00	98,00	Kileo 400 SL				

6 L/ha	8,65	94,00	97,50	98,00	6 L/ha	8,50	95,75	98,00	98,00
5 L/ha	7,33	90,98	95,08	98,00					

Table 3.2-15b: Summary of average efficacy 14-56 DAT of Orkan 350 SL (CAPBP).

Average efficacy 14-56 DAT			
5 L/ha	6 L/ha	7 L/ha	8 L/ha
94,68	96,50	97,25	97,25

Summary and conclusion (CAPBP)
Orkan 350 SL at dose 5 L/ha significantly reduced occurrence of CAPBP in apple orchards. At dose 5 L/ha average efficacy 14-56 DAT reached 94,68 %. There was no significant different between Orkan 350 SL and standard herbicides (Kileo 400 SL and Chwastox Extra 300 SL+ Agrosar 360 SL). To significantly reduce CAPBP recommended dose of Orkan 350 SL is 5 L/ha.

APPLE Orchards/GALAP

Table 3.2-16: Efficacy of Orkan 350 SL in all trials (GALAP).

	Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL				
Trial number	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
208_02_F19_347	8 L/ha	16,25	83,75	95	95	2,5L/ha + 5 L/ha	15	85	95	95
	7 L/ha	13,75	82,5	95	95	Kileo 400 SL				
	6 L/ha	16,25	77,5	90	90	6 L/ha	15	83,75	95	95
	5 L/ha	16,25	72,5	88,75	90	Chwastox Extra 300 SL + Agrosar 360 SL				
208_04_F19_349	8 L/ha	5	95	95	95	2,5L/ha + 5 L/ha	4	95	95	95
	7 L/ha	5	95	95	95					
	6 L/ha	5	95	95	95	Kileo 400 SL				
	5 L/ha	5	95	95	95	6 L/ha	5	95	95	95
208_06_F19_351	8 L/ha	3	90	95	95	Chwastox Extra 300 SL + Agrosar 360 SL				
	7 L/ha	2	90	95	95	2,5L/ha + 5 L/ha	2,5	90	95	95
	6 L/ha	2	90	95	95	Kileo 400 SL				
	5 L/ha	2,3	90	95	95	6 L/ha	2,3	90	95	95

A total of 3 trials were carried out to evaluate the efficacy of Orkan 350 SL for the control of GALAP in apple orchards. Trials were conducted in different regions in Poland where orchards are grown commercially. Trials were made of randomized block design with a minimum of four replicates. The trials were performed with the use of different apple cultivars, differing in growth strength as well as soil and water requirements. Orkan 350 SL was applied at dose rates: 8 L/ha, 7 L/ha, 6 L/ha and 5 L/ha. As a standards were used Kileo 400 SL at dose 6 L/ha and Chwastox Extra 300 SL+ Agrosar 360 SL at dose 2,5 L/ha + 5 L/ha. These studies were described in compliance with the principles of Good Experimental Practice (GEP) while the test results were summarize in appropriate Tables (see attachment No. 3.2-16a and No. 3.2-16b).

Table 3.2-16a: Average efficacy of Orkan 350 SL (GALAP).

Average efficacy

Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL				
dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
8 L/ha	8,08	89,58	95,00	95,00	2,5L/ha + 5 L/ha	7,17	90,00	95,00	95,00
7 L/ha	6,92	89,17	95,00	95,00	Kileo 400 SL				
6 L/ha	7,75	87,50	93,33	93,33	6 L/ha	7,43	89,58	95,00	95,00
5 L/ha	7,85	85,83	92,92	93,33					

Table 3.2-16b: Summary of average efficacy 14-56 DAT of Orkan 350 SL (GALAP).

Average efficacy 14-56 DAT			
5 L/ha	6 L/ha	7 L/ha	8 L/ha
90,69	91,39	93,06	93,19

Summary and conclusion (GALAP)
Orkan 350 SL at dose 5 L/ha significantly reduced occurrence of GALAP in apple orchards. At dose 5 L/ha average efficacy 14-56 DAT reached 90,69 %. There was no significant different between Orkan 350 SL and standard herbicides (Kileo 400 SL and Chwastox Extra 300 SL+ Agrosar 360 SL). To significantly reduce GALAP recommended dose of Orkan 350 SL is 5 L/ha.

APPLE Orchards/POAAN

Table 3.2-17: Efficacy of Orkan 350 SL in all trials (POAAN).

	Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL				
Trial number	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
208_01_F19_346	8 L/ha	9	90	99	99	2,5L/ha + 5 L/ha	7	90	99	99
	7 L/ha	7	90	99	99	Kileo 400 SL				
	6 L/ha	8	90	99	99	6 L/ha	6,5	90	99	99
	5 L/ha	7,5	90	99	99	Chwastox Extra 300 SL + Agrosar 360 SL				
208_02_F19_347	8 L/ha	12,5	88,75	95	95	2,5L/ha + 5 L/ha	12,5	86,25	95	95
	7 L/ha	11,25	86,25	95	95					
	6 L/ha	12,5	82,5	90	90	Kileo 400 SL				
	5 L/ha	12,5	77,5	90	90	6 L/ha	11,25	86,25	95	95

A total of 2 trials were carried out to evaluate the efficacy of Orkan 350 SL for the control of POAAN in apple orchards. Trials were conducted in different regions in Poland where orchards are grown commercially. Trials were made of randomized block design with a minimum of four replicates. The trials were performed with the use of different apple cultivars, differing in growth strength as well as soil and water requirements. Orkan 350 SL was applied at dose rates: 8 L/ha, 7 L/ha, 6 L/ha and 5 L/ha. As a standards were used Kileo 400 SL at dose 6 L/ha and Chwastox Extra 300 SL+ Agrosar 360 SL at dose 2,5 L/ha + 5 L/ha. These studies were described in compliance with the principles of Good Experimental Practice (GEP) while the test results were summarize in appropriate Tables (see attachment No. 3.2-17a and No. 3.2-17b).

Table 3.2-17a: Average efficacy of Orkan 350 SL (POAAN).

Average efficacy

Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL				
dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
8 L/ha	10,75	89,38	97,00	97,00	2,5L/ha + 5 L/ha	9,75	88,13	97,00	97,00
7 L/ha	9,13	88,13	97,00	97,00	Kileo 400 SL				
6 L/ha	10,25	86,25	94,50	94,50	6 L/ha	8,88	88,13	97,00	97,00
5 L/ha	10,00	83,75	94,50	94,50					

Table 3.2-17b: Summary of average efficacy 14-56 DAT of Orkan 350 SL (POAAN).

Average efficacy 14-56 DAT			
5 L/ha	6 L/ha	7 L/ha	8 L/ha
90,92	91,75	94,04	94,46

Summary and conclusion (POAAN)
Orkan 350 SL at dose 5 L/ha significantly reduced occurrence of POAAN in apple orchards. At dose 5 L/ha average efficacy 14-56 DAT reached 90,92 %. There was no significant different between Orkan 350 SL and standard herbicides (Kileo 400 SL and Chwastox Extra 300 SL+ Agrosar 360 SL). To significantly reduce POAAN recommended dose of Orkan 350 SL is 5 L/ha.

APPLE Orchards/LAMPU

Table 3.2-18: Efficacy of Orkan 350 SL in all trials (LAMPU).

	Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL				
Trial number	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
208_03_F19_348	8 L/ha	17,3	66,3	95	90	2,5L/ha + 5 L/ha	16,8	70	95	92,5
	7 L/ha	13,3	57,5	88,8	87,5	Kileo 400 SL				
	6 L/ha	14	51,3	82,5	75	6 L/ha	12	76,3	95	95
	5 L/ha	13,3	45	71,3	72,5	Chwastox Extra 300 SL + Agrosar 360 SL				
208_05_F19_350	8 L/ha	9	71,3	89,8	93,3	2,5L/ha + 5 L/ha	13,5	75	87,3	95,8
	7 L/ha	7,5	61,3	86,3	75					
	6 L/ha	8,3	53,8	78,8	60	Kileo 400 SL				
	5 L/ha	12,5	48,8	70	58,8	6 L/ha	11,3	81,3	90,8	99

A total of 2 trials were carried out to evaluate the efficacy of Orkan 350 SL for the control of LAMPU in apple orchards. Trials were conducted in different regions in Poland where orchards are grown commercially. Trials were made of randomized block design with a minimum of four replicates. The trials were performed with the use of different apple cultivars, differing in growth strength as well as soil and water requirements. Orkan 350 SL was applied at dose rates: 8 L/ha, 7 L/ha, 6 L/ha and 5 L/ha. As a standards were used Kileo 400 SL at dose 6 L/ha and Chwastox Extra 300 SL+ Agrosar 360 SL at dose 2,5 L/ha + 5 L/ha. These studies were described in compliance with the principles of Good Experimental Practice (GEP) while the test results were summarize in appropriate Tables (see attachment No. 3.2-18a and No. 3.2-18b).

Table 3.2-18a: Average efficacy of Orkan 350 SL (LAMPU).

Average efficacy

Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL				
dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
8 L/ha	13,15	68,80	92,40	91,65	2,5L/ha + 5 L/ha	15,15	72,50	91,15	94,15
7 L/ha	10,40	59,40	87,55	81,25	Kileo 400 SL				
6 L/ha	11,15	52,55	80,65	67,50	6 L/ha	11,65	78,80	92,90	97,00
5 L/ha	12,90	46,90	70,65	65,65					

Table 3.2-18b: Summary of average efficacy 14-56 DAT of Orkan 350 SL (LAMPU).

Average efficacy 14-56 DAT			
5 L/ha	6 L/ha	7 L/ha	8 L/ha
61,07	66,90	76,07	84,28

Summary and conclusion (LAMPU)

Orkan 350 SL at dose 8 L/ha significantly reduced occurrence of LAMPU in apple orchards. At dose 8 L/ha average efficacy 14-56 DAT reached 84,28 %. There was no significant different between Orkan 350 SL and standard herbicides (Kileo 400 SL and Chwastox Extra 300 SL+ Agrosar 360 SL). To significantly reduce LAMPU recommended dose of Orkan 350 SL is 8 L/ha.

APPLE Orchards/CHEAL

Table 3.2-19: Efficacy of Orkan 350 SL in all trials (CHEAL).

	Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL				
Trial number	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
208_04_F19_349	8 L/ha	5	95	95	95	2,5L/ha + 5 L/ha	5	95	95	95
	7 L/ha	7,5	95	95	95	Kileo 400 SL				
	6 L/ha	6,3	95	95	95	6 L/ha	6,3	95	95	95
	5 L/ha	6,3	95	95	95	Chwastox Extra 300 SL + Agrosar 360 SL				
208_05_F19_350	8 L/ha	16,8	72,5	93,8	99	2,5L/ha + 5 L/ha	15,5	76,3	91,3	99
	7 L/ha	22,5	63,8	83,8	86,3					
	6 L/ha	17,5	57,5	73,8	83,8	Kileo 400 SL				
	5 L/ha	14,8	51,3	63,8	71,3	6 L/ha	20,5	72,5	93,8	99
208_06_F19_351	8 L/ha	5,5	81,3	90	95	Chwastox Extra 300 SL + Agrosar 360 SL				
	7 L/ha	5,5	77,5	90	95	2,5L/ha + 5 L/ha	5,3	81,3	90	95
	6 L/ha	4,5	71,3	90	95	Kileo 400 SL				
	5 L/ha	5	65	90	95	6 L/ha	5,5	75	90	95

A total of 3 trials were carried out to evaluate the efficacy of Orkan 350 SL for the control of CHEAL in apple orchards. Trials were conducted in different regions in Poland where orchards are grown commercially. Trials were made of randomized block design with a minimum of four replicates. The trials were performed with the use of different apple cultivars, differing in growth strength as well as soil and water requirements. Orkan 350 SL was applied at dose rates: 8 L/ha, 7 L/ha, 6 L/ha and 5 L/ha. As a standards were used Kileo 400 SL at dose 6 L/ha and Chwastox Extra 300 SL+ Agrosar 360 SL at dose 2,5 L/ha + 5 L/ha. These studies were described in compliance with the principles of Good Experimental Practice (GEP) while the test results were summarize in appropriate Tables (see attachment No. 3.2-19a and No.

3.2-19b).

Table 3.2-19a: Average efficacy of Orkan 350 SL (CHEAL).

Average efficacy									
Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL				
dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
8 L/ha	9,10	82,93	92,93	96,33	2,5L/ha + 5 L/ha	8,60	84,20	92,10	96,33
7 L/ha	11,83	78,77	89,60	92,10	Kileo 400 SL				
6 L/ha	9,43	74,60	86,27	91,27	6 L/ha	10,77	80,83	92,93	96,33
5 L/ha	8,70	70,43	82,93	87,10					

Table 3.2-19b: Summary of average efficacy 14-56 DAT of Orkan 350 SL (CHEAL).

Average efficacy 14-56 DAT			
5 L/ha	6 L/ha	7 L/ha	8 L/ha
80,16	84,04	86,82	90,73

Summary and conclusion (CHEAL)
Orkan 350 SL at dose 7 L/ha significantly reduced occurrence of CHEAL in apple orchards. At dose 7 L/ha average efficacy 14-56 DAT reached 86,82 %. There was no significant different between Orkan 350 SL and standard herbicides (Kileo 400 SL and Chwastox Extra 300 SL+ Agrosar 360 SL). To significantly reduce CHEAL recommended dose of Orkan 350 SL is 7 L/ha.

APPLE Orchards/GERPU

Table 3.2-20: Efficacy of Orkan 350 SL in all trials (GERPU).

	Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL				
Trial number	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
208_05_F19_350	8 L/ha	6,8	99	99	99	2,5L/ha + 5 L/ha	9	99	99	99
	7 L/ha	6,8	98	99	99	Kileo 400 SL				
	6 L/ha	9	87,5	92,3	90,8	6 L/ha	9	99	99	99
	5 L/ha	7,5	72,5	78,8	79,8	Chwastox Extra 300 SL + Agrosar 360 SL				
208_06_F19_351	8 L/ha	3,3	72,5	92,5	90	2,5L/ha + 5 L/ha	2,8	72,5	87,5	86,3
	7 L/ha	2,5	70	86,3	85					
	6 L/ha	2,3	60	76,3	73,8	Kileo 400 SL				
	5 L/ha	2,8	51,3	71,3	68,8	6 L/ha	2,5	67,5	88,8	87,5

A total of 2 trials were carried out to evaluate the efficacy of Orkan 350 SL for the control of GERPU in apple orchards. Trials were conducted in different regions in Poland where orchards are grown commercially. Trials were made of randomized block design with a minimum of four replicates. The trials were performed with the use of different apple cultivars, differing in growth strength as well as soil and water requirements. Orkan 350 SL was applied at dose rates: 8 L/ha, 7 L/ha, 6 L/ha and 5 L/ha. As a standards were used Kileo 400 SL at dose 6 L/ha and Chwastox Extra 300 SL+ Agrosar 360 SL at dose 2,5 L/ha + 5 L/ha. These studies were described in compliance with the principles of Good Experimental Practice (GEP) while the test results were summarize in appropriate Tables (see attachment No. 3.2-20a and No.

3.2-20b).

Table 3.2-20a: Average efficacy of Orkan 350 SL (GERPU).

Average efficacy									
Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL				
dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
8 L/ha	5,05	85,75	95,75	94,50	2,5L/ha + 5 L/ha	5,90	85,75	93,25	92,65
7 L/ha	4,65	84,00	92,65	92,00	Kileo 400 SL				
6 L/ha	5,65	73,75	84,30	82,30	6 L/ha	5,75	83,25	93,90	93,25
5 L/ha	5,15	61,90	75,05	74,30					

Table 3.2-20b: Summary of average efficacy 14-56 DAT of Orkan 350 SL (GERPU).

Average efficacy 14-56 DAT			
5 L/ha	6 L/ha	7 L/ha	8 L/ha
70,42	80,12	89,55	92,00

Summary and conclusion (GERPU)
Orkan 350 SL at dose 7 L/ha significantly reduced occurrence of GERPU in apple orchards. At dose 7 L/ha average efficacy 14-56 DAT reached 89,55 %. There was no significant different between Orkan 350 SL and standard herbicides (Kileo 400 SL and Chwastox Extra 300 SL+ Agrosar 360 SL). To significantly reduce GERPU recommended dose of Orkan 350 SL is 7 L/ha.

APPLE Orchards/ECHCG, AGREE, CONAR, POLAV, EQUAR, MALNE

Table 3.2-21: Efficacy of Orkan 350 SL in trial UNRS 9/2000/II/Herb. (14 DAT)

trial	Efficacy 14 DAT					
	weed	Orkan 350 SL			Roundup 360 SL 5 l/ha +Chwastox Extra 300 SL 2,5 l/ha	number of weeds [plant/m2]
		5 l/ha	7 l/ha	9 l/ha		
UNRS 9/2000/II/Herb.	ECHCG	90,3	93,9	98,7	98,7	24
	AGRRE	42,5	47,5	51,3	46,2	9
	CONAR	36,2	71,3	73,8	72,5	5
	POLAV	63,8	68,8	77,5	73,9	8
	EQUAR	43,8	48,7	53,8	51,3	12
	MALNE	38,7	73,8	80,1	78,8	6

Table 3.2-21a: Efficacy of Orkan 350 SL in trial UNRS 9/2000/II/Herb. (28 DAT)

trial	Efficacy 28 DAT					
	weed	Orkan 350 SL			Roundup 360 SL 5 l/ha +Chwastox	number of weeds [plant/m2]
		5 l/ha	7 l/ha	9 l/ha		

					Extra 300 SL 2,5 l/ha	
UNRS 9/2000/II/Herb.	ECHCG	99,7	100	100	100	24
	AGRRE	76,3	93,9	99,7	97,2	9
	CONAR	58,8	90	98,7	95	5
	POLAV	85,2	97,2	100	98,7	8
	EQUAR	71,3	86,3	93,9	96,3	12
	MALNE	62,5	92,7	97,2	93,9	6

Table 3.2-21b: Average efficacy of Orkan 350 SL in trial UNRS 9/2000/II/Herb. (14DAT, 28 DAT)

trial	average efficacy 14, 28 DAT					
	weed	Orkan 350 SL			Roundup 360 SL 5 l/ha +Chwastox Extra 300 SL 2,5 l/ha	number of weeds [plant/m2]
		5 l/ha	7 l/ha	9 l/ha		
UNRS 9/2000/II/Herb.	ECHCG	95	96,95	99,35	99,35	24
	AGRRE	59,4	70,7	75,5	71,7	9
	CONAR	47,5	80,65	86,25	83,75	5
	POLAV	74,5	83	88,75	86,3	8
	EQUAR	57,55	67,5	73,85	73,8	12
	MALNE	50,6	83,25	88,65	86,35	6

Table 3.2-21c: Efficacy of Orkan 350 SL in trial UNRS 6/2001/II/Herb. (28 DAT)

trial	Efficacy 28 DAT				
	weed	Orkan 350 SL		Roundup 360 SL 5 l/ha +Chwastox Extra 300 SL 2,5 l/ha	number of weeds [plant/m2]
		5 l/ha	8 l/ha		
UNRS 6/2001/II/Herb.	ECHCG	100	100	100	17
	AGRRE	75,1	97,2	92,7	6
	CONAR	61,3	96,3	95	5
	POLAV	82,6	100	100	9
	EQUAR	72,5	95	98,7	12
	MALNE	70	91,4	90	5

A total of 2 trials were carried out to evaluate the efficacy of Orkan 350 SL for the control of ECHCG, AGRRE, CONAR, POLAV, EQUAR and MALNE in apple orchards. Trials were conducted in different regions in Poland where orchards are grown commercially. Trials were made of randomized block design with a minimum of four replicates. The trials were performed with the use of different apple cultivars, differing in growth strength as well as soil and water requirements. Orkan 350 SL was applied at dose rates: 9 L/ha, 8 L/ha, 7 L/ha and 5 L/ha. As a standards were used Chwastox Extra 300 SL+ Roundup 360 SL at dose 2,5 L/ha + 5 L/ha. These studies were described in compliance with the principles of Good Experimental Practice (GEP) while the test results were summarize in appropriate Tables (see attachment No. 3.2-22).

Table 3.2-22: Summary of average efficacy 14-28 DAT of Orkan 350 SL in trials : UNRS 9/2000/II/Herb. and UNRS 6/2001/II/Herb.

Average efficacy 14, 28 DAT (trials: UNRS 9/2000/II/Herb., UNRS 6/2001/II/Herb.)				
Weed species	Orkan 350 SL			
	5 l/ha	7 l/ha	8 l/ha	9 l/ha
ECHCG	97,5	98,475	100	99,35
AGRRE	67,25	83,95	97,2	75,5
CONAR	54,4	88,475	96,3	86,25
POLAV	78,55	91,5	100	88,75
EQUAR	65,025	81,25	95	73,85
MALNE	60,3	87,325	91,4	88,65

Summary and conclusion (ECHCG, AGREE, CONAR, POLAV, EQUAR, MALNE)
Orkan 350 SL at dose 5 L/ha significantly reduced occurrence of ECHCG in apple orchards. Orkan 350 SL at dose 7 L/ha significantly reduced occurrence of CONAR, POLAV and MALNE in apple orchards. Orkan 350 SL at dose 8 L/ha significantly reduced occurrence of AGRRE and EQUAR in apple orchards. To significantly reduce ECHCG recommended dose of Orkan 350 SL is 5 L/ha. To significantly reduce CONAR, POLAV and MALNE recommended dose of Orkan 350 SL is 7 L/ha. To significantly reduce AGRRE and EQUAR recommended dose of Orkan 350 SL is 8 L/ha.

Table 3.2-21: Summary of efficacy 14-56 DAT of Orkan 350 SL in apple orchards.

Weed Species	Efficacy of Orkan 350 SL assessed 14-56 DAT					
	No. of trials where weed occurred	at 5 L/ha	at 6 L/ha	at 7 L/ha	at 8 L/ha	Comments - weed classification according to EPPO scale of efficacy *
TAROF	5	69,94333	76,09333	83,76	86,76	
EPICT	5	66,68	73,44	81,10667	85,18667	
SENVU	3	96,31111	97,88889	98	98	
STEME	6	93,9	94,58333	95,96111	96,32222	
CAPBP	4	94,68333	96,5	97,25	97,25	
GALAP	3	90,69444	91,38889	93,05556	93,19444	
POAAN	2	90,91667	91,75	94,04167	94,45833	
LAMPU	2	61,06667	66,9	76,06667	84,28333	
CHEAL	3	80,15556	84,04444	86,82222	90,73333	
GERPU	2	70,41667	80,11667	89,55	92	

> 85%	effective
70-85%	medium effective
60-70%	medium resistant
<60 %	resistant

Summary and conclusion

Orkan 350 SL at dose 5 L/ha significantly reduced occurrence of SENVU, STEME, CAPBP, GALAP, ECHCG and POAAN in apple orchards. There was no significant different between Orkan 350 SL and standard herbicides (Kileo 400 SL,Chwastox Extra 300 SL+ Agrosar 360 SL and Chwastox Extra 300 SL+ Roundup 360 SL). To significantly reduce SENVU, STEME, CAPBP, GALAP, ECHCG and POAAN recommended dose of Orkan 350 SL is 5 L/ha.
Orkan 350 SL at dose 7 L/ha significantly reduced occurrence of CHEAL, CONAR, POLAV, MALNE and GERPU in apple orchards. There was no significant different between Orkan 350 SL and standard herbicides (Kileo 400 SL, Chwastox Extra 300 SL+ Agrosar 360 SL and and Chwastox Extra 300 SL+ Roundup 360 SL). To significantly reduce CHEAL, CONAR, POLAV, MALNE and GERPU recommended dose of Orkan 350 SL is 7 L/ha.
Orkan 350 SL at dose 8 L/ha significantly reduced occurrence of TAROF, EPICT, AGRRE, EQUAR and LAMPU in apple orchards. There was no significant different between Orkan 350 SL and standard herbicides (Kileo 400 SL,Chwastox Extra 300 SL+ Agrosar 360 SL and Chwastox Extra 300 SL+ Roundup 360 SL). To significantly reduce TAROF, EPICT, AGRRE, EQUAR and LAMPU recommended dose of Orkan 350 SL is 8 L/ha.

CHERRY Orchards/TAROF

Table 3.2-22: Efficacy of Orkan 350 SL in all trials (TAROF).

	Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL				
Trial number	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
210_01_F19_356	8 L/ha	8,75	90	93,75	95	2,5L/ha + 5 L/ha	10	88,75	92,5	93,75
	7 L/ha	10	90	87,5	91,25	Kileo 400 SL				
	6 L/ha	8,75	86,25	82,5	82,5	6 L/ha	10	90	92,5	93,75
	5 L/ha	7,5	77,5	78,75	76,25	Chwastox Extra 300 SL + Agrosar 360 SL				
210_02_F19_357	8 L/ha	5	77,5	93,8	95	2,5L/ha + 5 L/ha	5	77,5	91,3	92,5
	7 L/ha	5	75	91,3	92,5					
	6 L/ha	5	62,5	81,3	85	Kileo 400 SL				
	5 L/ha	5	60	80	82,5	6 L/ha	5	78,8	93,8	95
210_03_F19_358	8 L/ha	16,8	78,8	90	91,3	Chwastox Extra 300 SL + Agrosar 360 SL				
	7 L/ha	18,8	73,8	83,8	86,3	2,5L/ha + 5 L/ha	14,8	81,3	90	90
	6 L/ha	18,8	63,8	76,3	80	Kileo 400 SL				
	5 L/ha	14	57,5	70	72,5	6 L/ha	18	80	90	90
210_04_F19_359	8 L/ha	2	90	93,75	93,75	Chwastox Extra 300 SL + Agrosar 360 SL				
	7 L/ha	1	90	92,5	92,5	2,5L/ha + 5 L/ha	1,5	90	92,5	92,5
	6 L/ha	1	85	91,25	91,25	Kileo 400 SL				
	5 L/ha	1,25	76,25	90	90	6 L/ha	1,25	88,75	85	85

A total of 4 trials were carried out to evaluate the efficacy of Orkan 350 SL for the control of TAROF in cherry orchards. Trials were conducted in different regions in Poland where orchards are grown commercially. Trials were made of randomized block design with a minimum of four replicates. Orkan 350 SL was applied at dose rates: 8 L/ha, 7 L/ha, 6 L/ha and 5 L/ha. As a standards were used Kileo 400 SL at dose 6 L/ha and Chwastox Extra 300 SL+ Agrosar 360 SL at dose 2,5 L/ha + 5 L/ha. These studies were described in compliance with the principles of Good Experimental Practice (GEP) while the test results were summarize in appropriate Tables (see attachment No. 3.2-22a and No. 3.2-22b).

Table 3.2-22a: Average efficacy of Orkan 350 SL (TAROF).

Average efficacy									
Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL				
dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
8 L/ha	8,14	84,08	92,83	93,76	2,5L/ha + 5 L/ha	7,83	84,39	91,58	92,19
7 L/ha	8,70	82,20	88,78	90,64	Kileo 400 SL				
6 L/ha	8,39	74,39	82,84	84,69	6 L/ha	8,56	84,39	90,33	90,94
5 L/ha	6,94	67,81	79,69	80,31					

Table 3.2-22b: Summary of average efficacy 14-56 DAT of Orkan 350 SL (TAROF).

Average efficacy 14-56 DAT			
5 L/ha	6 L/ha	7 L/ha	8 L/ha
75,94	80,64	87,20	90,22

Summary and conclusion (TAROF)

Orkan 350 SL at dose 7 L/ha significantly reduced occurrence of TAROF in cherry orchards. At dose 7 L/ha average efficacy 14-56 DAT reached 87,2 %. There was no significant different between Orkan 350 SL and standard herbicides (Kileo 400 SL and Chwastox Extra 300 SL+ Agrosar 360 SL). To significantly reduce TAROF recommended dose of Orkan 350 SL is 7 L/ha.

CHERRY Orchards/EPICT

Table 3.2-23: Efficacy of Orkan 350 SL in all trials (EPICT).

	Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL				
Trial number	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
210_01_F19_356	8 L/ha	5	91,25	95	95	2,5L/ha + 5 L/ha	5	86,25	93,75	93,75
	7 L/ha	5	90	92,5	93,75	Kileo 400 SL				
	6 L/ha	5	87,5	82,5	81,25	6 L/ha	5	92,5	95	93,75
	5 L/ha	5	81,25	77,5	77,5	Chwastox Extra 300 SL + Agrosar 360 SL				
210_02_F19_357	8 L/ha	3	81,3	95	95	2,5L/ha + 5 L/ha	3	76,3	91,3	95
	7 L/ha	3	80	95	95					
	6 L/ha	3	72,5	81,3	85	Kileo 400 SL				
	5 L/ha	3	70	81,3	85	6 L/ha	3	77,5	92,5	95
210_03_F19_358	8 L/ha	6,8	77,5	85	85	Chwastox Extra 300 SL + Agrosar 360 SL				
	7 L/ha	5,3	75	80	80	2,5L/ha + 5 L/ha	7,5	76,3	85	85
	6 L/ha	6	68,8	77,5	77,5	Kileo 400 SL				
	5 L/ha	5,3	65	67,5	67,5	6 L/ha	6	73,8	85	85

A total of 3 trials were carried out to evaluate the efficacy of Orkan 350 SL for the control of EPICT in cherry orchards. Trials were conducted in different regions in Poland where orchards are grown commercially. Trials were made of randomized block design with a minimum of four replicates. Orkan 350 SL was applied at dose rates: 8 L/ha, 7 L/ha, 6 L/ha and 5 L/ha. As a standards were used Kileo 400 SL at dose 6 L/ha and Chwastox Extra 300 SL+ Agrosar 360 SL at dose 2,5 L/ha + 5 L/ha. These studies were

described in compliance with the principles of Good Experimental Practice (GEP) while the test results were summarize in appropriate Tables (see attachment No. 3.2-23a and No. 3.2-23b).

Table 3.2-23a: Average efficacy of Orkan 350 SL (EPICT).

Average efficacy									
Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL (kontrola)				
dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
8 L/ha	4,93	83,35	91,67	91,67	2,5L/ha + 5 L/ha	5,17	79,62	90,02	91,25
7 L/ha	4,43	81,67	89,17	89,58	Kileo 400 SL				
6 L/ha	4,67	76,27	80,43	81,25	6 L/ha	4,67	81,27	90,83	91,25
5 L/ha	4,43	72,08	75,43	76,67					

Table 3.2-23b: Summary of average efficacy 14-56 DAT of Orkan 350 SL (EPICT).

Average efficacy 14-56DAT			
5 L/ha	6 L/ha	7 L/ha	8 L/ha
74,73	79,32	86,81	88,89

Summary and conclusion (EPICT)

Orkan 350 SL at dose 7 L/ha significantly reduced occurrence of EPICT in cherry orchards. At dose 7 L/ha average efficacy 14-56 DAT reached 86,81 %. There was no significant different between Orkan 350 SL and standard herbicides (Kileo 400 SL and Chwastox Extra 300 SL+ Agrosar 360 SL). To significantly reduce EPICT recommended dose of Orkan 350 SL is 7 L/ha.

CHERRY Orchards/SENVU

Table 3.2-24: Efficacy of Orkan 350 SL in all trials (SENVU).

	Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL				
Trial number	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
210_02_F19_357	8 L/ha	5,8	92,5	95	95	2,5L/ha + 5 L/ha	6,3	93,8	95	95
	7 L/ha	6	91,3	95	95	Kileo 400 SL				
	6 L/ha	6,3	90	95	95	6 L/ha	7	92,5	95	95
	5 L/ha	4,5	90	95	95	Chwastox Extra 300 SL + Agrosar 360 SL (kontrola)				
210_03_F19_358	8 L/ha	9	99	99	99	2,5L/ha + 5 L/ha	8,3	99	99	99
	7 L/ha	9	99	99	98					
	6 L/ha	8,3	95	99	96	Kileo 400 SL				
	5 L/ha	11,3	90	93,8	87,5	6 L/ha	8,3	99	99	99

A total of 2 trials were carried out to evaluate the efficacy of Orkan 350 SL for the control of SENVU in cherry orchards. Trials were conducted in different regions in Poland where orchards are grown commercially. Trials were made of randomized block design with a minimum of four replicates. Orkan 350 SL was applied at dose rates: 8 L/ha, 7 L/ha, 6 L/ha and 5 L/ha. As a standards were used Kileo 400 SL at dose 6 L/ha and Chwastox Extra 300 SL+ Agrosar 360 SL at dose 2,5 L/ha + 5 L/ha. These studies were

described in compliance with the principles of Good Experimental Practice (GEP) while the test results were summarize in appropriate Tables (see attachment No. 3.2-24a and No. 3.2-24b).

Table 3.2-24a: Average efficacy of Orkan 350 SL (SENVU).

Average efficacy									
Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL (kontrola)				
dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
8 L/ha	7,40	95,75	97,00	97,00	2,5L/ha + 5 L/ha	7,30	96,40	97,00	97,00
7 L/ha	7,50	95,15	97,00	96,50	Kileo 400 SL				
6 L/ha	7,30	92,50	97,00	95,50	6 L/ha	7,65	95,75	97,00	97,00
5 L/ha	7,90	90,00	94,40	91,25					

Table 3.2-24b: Summary of average efficacy 14-56 DAT of Orkan 350 SL (SENVU).

Average efficacy 14-56 DAT			
5 L/ha	6 L/ha	7 L/ha	8 L/ha
91,88	95,00	96,22	96,58

Summary and conclusion (SENVU)
Orkan 350 SL at dose 5 L/ha significantly reduced occurrence of SENVU in cherry orchards. At dose 5 L/ha average efficacy 14-56 DAT reached 91,88 %. There was no significant different between Orkan 350 SL and standard herbicides (Kileo 400 SL and Chwastox Extra 300 SL+ Agrosar 360 SL). To significantly reduce SENVU recommended dose of Orkan 350 SL is 5 L/ha.

CHERRY Orchards/STEME

Table 3.2-25: Efficacy of Orkan 350 SL in all trials (STEME).

	Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL				
Trial number	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
210_01_F19_356	8 L/ha	11,25	90	95	95	2,5L/ha + 5 L/ha	11,25	90	95	95
	7 L/ha	11,25	90	95	95	Kileo 400 SL				
	6 L/ha	11,25	87,5	95	95	6 L/ha	10	91,25	95	95
	5 L/ha	12,5	85	93,75	95	Chwastox Extra 300 SL + Agrosar 360 SL				
210_02_F19_357	8 L/ha	10	90	95	95	2,5L/ha + 5 L/ha	8,8	90	95	95
	7 L/ha	8,8	90	95	95					
	6 L/ha	6,3	85	95	95	Kileo 400 SL				
	5 L/ha	8,8	85	95	95	6 L/ha	7,5	90	95	95
210_03_F19_358	8 L/ha	11,3	88,8	99	99	Chwastox Extra 300 SL + Agrosar 360 SL				
	7 L/ha	7,5	82,5	99	98	2,5L/ha + 5 L/ha	7,5	85	99	99
	6 L/ha	7,5	77,5	96	93,8	Kileo 400 SL				
	5 L/ha	8,3	75	90	90	6 L/ha	9,8	91,3	99	99
210_04_F19_359	8 L/ha	2	90	95	95	Chwastox Extra 300 SL + Agrosar 360 SL				
	7 L/ha	2	90	95	95	2,5L/ha + 5 L/ha	2,25	90	95	95

	6 L/ha	1,5	86,25	95	95	Kileo 400 SL				
	5 L/ha	2,5	82,5	93,75	93,75	6 L/ha	1,5	90	95	95

A total of 4 trials were carried out to evaluate the efficacy of Orkan 350 SL for the control of STEME in cherry orchards. Trials were conducted in different regions in Poland where orchards are grown commercially. Trials were made of randomized block design with a minimum of four replicates. Orkan 350 SL was applied at dose rates: 8 L/ha, 7 L/ha, 6 L/ha and 5 L/ha. As a standards were used Kileo 400 SL at dose 6 L/ha and Chwastox Extra 300 SL+ Agrosar 360 SL at dose 2,5 L/ha + 5 L/ha. These studies were described in compliance with the principles of Good Experimental Practice (GEP) while the test results were summarize in appropriate Tables (see attachment No. 3.2-25a and No. 3.2-25b).

Table 3.2-25a: Average efficacy of Orkan 350 SL (STEME).

Average efficacy									
Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL				
dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
8 L/ha	8,64	89,70	96,00	96,00	2,5L/ha + 5 L/ha	7,45	88,75	96,00	96,00
7 L/ha	7,39	88,13	96,00	95,75	Kileo 400 SL				
6 L/ha	6,64	84,06	95,25	94,70	6 L/ha	7,20	90,64	96,00	96,00
5 L/ha	8,03	81,88	93,13	93,44					

Table 3.2-25b: Summary of average efficacy 14-56 DAT of Orkan 350 SL (STEME).

Average efficacy 14-56 DAT			
5 L/ha	6 L/ha	7 L/ha	8 L/ha
89,48	91,34	93,29	93,90

Summary and conclusion (STEME)
Orkan 350 SL at dose 5 L/ha significantly reduced occurrence of STEME in cherry orchards. At dose 5 L/ha average efficacy 14-56 DAT reached 89,48 %. There was no significant different between Orkan 350 SL and standard herbicides (Kileo 400 SL and Chwastox Extra 300 SL+ Agrosar 360 SL). To significantly reduce STEME recommended dose of Orkan 350 SL is 5 L/ha.

CHERRY Orchards/POAAN

Table 3.2-26: Efficacy of Orkan 350 SL in all trials (POAAN).

	Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL				
Trial number	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
210_01_F19_356	8 L/ha	12,5	91,25	95	95	2,5L/ha + 5 L/ha	12,5	90	92,5	93,75
	7 L/ha	11,25	91,25	95	95	Kileo 400 SL				
	6 L/ha	13,75	87,5	93,75	95	6 L/ha	11,25	92,5	95	95
	5 L/ha	12,5	87,5	88,75	93,75	Chwastox Extra 300 SL + Agrosar 360 SL				
210_02_F19_357	8 L/ha	13,8	93,8	95	95	2,5L/ha + 5 L/ha	10	92,5	95	95
	7 L/ha	10	92,5	95	95					
	6 L/ha	11,3	90	95	95	Kileo 400 SL				

	5 L/ha	13,8	90	95	95	6 L/ha	11,3	93,8	95	95
210_03_F19_358	8 L/ha	23,8	99	99	99	Chwastox Extra 300 SL + Agrosar 360 SL				
	7 L/ha	20	93,8	99	98	2,5L/ha + 5 L/ha	25	99	99	99
	6 L/ha	23,8	88,8	96	93,8	Kileo 400 SL				
	5 L/ha	21,3	88,8	93,8	90	6 L/ha	22,5	99	99	99

A total of 3 trials were carried out to evaluate the efficacy of Orkan 350 SL for the control of POAAN in cherry orchards. Trials were conducted in different regions in Poland where orchards are grown commercially. Trials were made of randomized block design with a minimum of four replicates. Orkan 350 SL was applied at dose rates: 8 L/ha, 7 L/ha, 6 L/ha and 5 L/ha. As a standards were used Kileo 400 SL at dose 6 L/ha and Chwastox Extra 300 SL+ Agrosar 360 SL at dose 2,5 L/ha + 5 L/ha. These studies were described in compliance with the principles of Good Experimental Practice (GEP) while the test results were summarize in appropriate Tables (see attachment No. 3.2-26a and No. 3.2-26b).

Table 3.2-26a: Average efficacy of Orkan 350 SL (POAAN).

Average efficacy									
Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL				
dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
8 L/ha	16,70	94,68	96,33	96,33	2,5L/ha + 5 L/ha	15,83	93,83	95,50	95,92
7 L/ha	13,75	92,52	96,33	96,00	Kileo 400 SL				
6 L/ha	16,28	88,77	94,92	94,60	6 L/ha	15,02	95,10	96,33	96,33
5 L/ha	15,87	88,77	92,52	92,92					

Table 3.2-26b: Summary of average efficacy 14-56 DAT of Orkan 350 SL (POAAN).

Average efficacy 14-56 DAT			
5 L/ha	6 L/ha	7 L/ha	8 L/ha
91,40	92,76	94,95	95,78

Summary and conclusion (POAAN)

Orkan 350 SL at dose 5 L/ha significantly reduced occurrence of POAAN in cherry orchards. At dose 5 L/ha average efficacy 14-56 DAT reached 91,4 %. There was no significant different between Orkan 350 SL and standard herbicides (Kileo 400 SL and Chwastox Extra 300 SL+ Agrosar 360 SL). To significantly reduce POAAN recommended dose of Orkan 350 SL is 5 L/ha.

CHERRY Orchards/VICCR

Table 3.2-27: Efficacy of Orkan 350 SL in all trials (VICCR).

	Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL				
Trial number	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
210_01_F19_356	8 L/ha	7,5	90	95	95	2,5L/ha + 5 L/ha	8,75	91,25	95	95
	7 L/ha	7,5	90	95	95	Kileo 400 SL				
	6 L/ha	7,5	87,5	95	95	6 L/ha	8,75	92,5	95	95
	5 L/ha	8,75	86,25	92,5	95	Chwastox Extra 300 SL + Agrosar 360 SL				

210_03_F19_358	8 L/ha	4,5	99	99	99	2,5L/ha + 5 L/ha	3	99	99	99
	7 L/ha	3,8	99	99	99					
	6 L/ha	3,8	99	99	99	Kileo 400 SL				
	5 L/ha	3,8	99	99	99	6 L/ha	3,8	99	99	99

A total of 2 trials were carried out to evaluate the efficacy of Orkan 350 SL for the control of VICCR in cherry orchards. Trials were conducted in different regions in Poland where orchards are grown commercially. Trials were made of randomized block design with a minimum of four replicates. Orkan 350 SL was applied at dose rates: 8 L/ha, 7 L/ha, 6 L/ha and 5 L/ha. As a standards were used Kileo 400 SL at dose 6 L/ha and Chwastox Extra 300 SL+ Agrosar 360 SL at dose 2,5 L/ha + 5 L/ha. These studies were described in compliance with the principles of Good Experimental Practice (GEP) while the test results were summarize in appropriate Tables (see attachment No. 3.2-27a and No. 3.2-27b).

Table 3.2-27a: Average efficacy of Orkan 350 SL (VICCR).

Average efficacy									
Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL				
dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
8 L/ha	6,00	94,50	97,00	97,00	2,5L/ha + 5 L/ha	5,88	95,13	97,00	97,00
7 L/ha	5,65	94,50	97,00	97,00	Kileo 400 SL				
6 L/ha	5,65	93,25	97,00	97,00	6 L/ha	6,28	95,75	97,00	97,00
5 L/ha	6,28	92,63	95,75	97,00					

Table 3.2-27b: Summary of average efficacy 14-56 DAT of Orkan 350 SL (VICCR).

Average efficacy 14-56 DAT			
5 L/ha	6 L/ha	7 L/ha	8 L/ha
95,13	95,75	96,17	96,17

Summary and conclusion (VICCR)

Orkan 350 SL at dose 5 L/ha significantly reduced occurrence of VICCR in cherry orchards. At dose 5 L/ha average efficacy 14-56 DAT reached 95,13 %. There was no significant different between Orkan 350 SL and standard herbicides (Kileo 400 SL and Chwastox Extra 300 SL+ Agrosar 360 SL). To significantly reduce VICCR recommended dose of Orkan 350 SL is 5 L/ha.

CHERRY Orchards/CHEAL

Table 3.2-28: Efficacy of Orkan 350 SL in all trials (CHEAL).

	Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL				
Trial number	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
210_02_F19_357	8 L/ha	8	92,5	95	95	2,5L/ha + 5 L/ha	7,3	90	95	95
	7 L/ha	7,3	90	95	95	Kileo 400 SL				
	6 L/ha	7	90	95	95	6 L/ha	9	90	95	95
	5 L/ha	9	90	95	95	Chwastox Extra 300 SL + Agrosar 360 SL (kontrola)				
210_04_F19_359	8 L/ha	4,75	91,25	95	95	2,5L/ha +	4,75	91,25	92,5	92,5

	7 L/ha	4,75	90	95	95	5 L/ha				
	6 L/ha	4,25	82,5	91,25	91,25	Kileo 400 SL				
	5 L/ha	4,5	77,5	86,25	86,25	6 L/ha	4,5	91,25	95	95

A total of 2 trials were carried out to evaluate the efficacy of Orkan 350 SL for the control of CHEAL in cherry orchards. Trials were conducted in different regions in Poland where orchards are grown commercially. Trials were made of randomized block design with a minimum of four replicates. Orkan 350 SL was applied at dose rates: 8 L/ha, 7 L/ha, 6 L/ha and 5 L/ha. As a standards were used Kileo 400 SL at dose 6 L/ha and Chwastox Extra 300 SL+ Agrosar 360 SL at dose 2,5 L/ha + 5 L/ha. These studies were described in compliance with the principles of Good Experimental Practice (GEP) while the test results were summarize in appropriate Tables (see attachment No. 3.2-28a and No. 3.2-28b).

Table 3.2-28a: Average efficacy of Orkan 350 SL (CHEAL).

Average efficacy									
Orkan 350 SL					Chwastox Extra 300 SL + Agrosar 360 SL				
dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)	dose	number of weeds/m2 (%)	Efficacy 14DAT (%)	Efficacy 28DAT (%)	Efficacy 56DAT (%)
8 L/ha	6,38	91,88	95,00	95,00	2,5L/ha + 5 L/ha	6,03	90,63	93,75	93,75
7 L/ha	6,03	90,00	95,00	95,00	Kileo 400 SL				
6 L/ha	5,63	86,25	93,13	93,13	6 L/ha	6,75	90,63	95,00	95,00
5 L/ha	6,75	83,75	90,63	90,63					

Table 3.2-28b: Summary of average efficacy 14-56 DAT of Orkan 350 SL (CHEAL).

Average efficacy 14-56 DAT			
5 L/ha	6 L/ha	7 L/ha	8 L/ha
88,33	90,83	93,33	93,96

Summary and conclusion (CHEAL)

Orkan 350 SL at dose 5 L/ha significantly reduced occurrence of CHEAL in cherry orchards. At dose 5 L/ha average efficacy 14-56 DAT reached 88,33 %. There was no significant different between Orkan 350 SL and standard herbicides (Kileo 400 SL and Chwastox Extra 300 SL+ Agrosar 360 SL). To significantly reduce VICCR recommended dose of Orkan 350 SL is 5 L/ha.

Table 3.2-29: Summary of efficacy 14-56 DAT of Orkan 350 SL in cherry orchards.

Weed Species	Efficacy of Orkan 350 SL assessed 14-56 DAT					
	No. of trials where weed occurred	at 5 L/ha	at 6 L/ha	at 7 L/ha	at 8 L/ha	Comments - weed classification according to EPPO scale of efficacy *
TAROF	4	75,9375	80,6375	87,2041667	90,22083	
EPICT	3	74,72778	79,31667	86,8055556	88,89444	

SENVU	2	91,88333	95	96,2166667	96,58333	
STEME	4	89,47917	91,3375	93,2916667	93,9	
POAAN	3	91,4	92,76111	94,95	95,78333	
VICCR	2	95,125	95,75	96,1666667	96,16667	
CHEAL	2	88,33333	90,83333	93,3333333	93,95833	

> 85%	effective
70-85%	medium effective
60-70%	medium resistant
<60 %	resistant

Summary and conclusion

Orkan 350 SL at dose 7 L/ha significantly reduced occurrence of TAROF and EPICT in cherry orchards. There was no significant different between Orkan 350 SL and standard herbicides (Kileo 400 SL and Chwastox Extra 300 SL+ Agrosar 360 SL). To significantly reduce TAROF and EPICT recommended dose of Orkan 350 SL is 7 L/ha.

Orkan 350 SL at dose 5 L/ha significantly reduced occurrence of SENVY, STEME, POAAN, VICCR and CHEAL in cherry orchards. There was no significant different between Orkan 350 SL and standard herbicides (Kileo 400 SL and Chwastox Extra 300 SL+ Agrosar 360 SL). To significantly reduce SENVY, STEME, POAAN, VICCR and CHEAL recommended dose of Orkan 350 SL is 5 L/ha.

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

A total of 10 trials were carried out in 2019 in Poland. The objective was to confirm the yield response of Orkan 350 SL in the presence of *Senecio vulgaris, Stellaria media, Capsella-bursa-pastoris, Galium aparine, Poa annua, Chenopodium album, Geranium pusillum, Taraxacum officinale, Epilobium ciliatum, Lamium purpureum* and *Vicia cracca*.

Orkan 350 SL at all tested rates did not have a negative effect on crop quality apple and cherries varieties studied. There was no effect of the test preparations on the quality parameters of yield.

Summary and conclusion

Tested product- Orkan 350 SL showed high efficacy reduced occurrence of *Senecio vulgaris, Stellaria media, Capsella-bursa-pastoris, Galium aparine, Poa annua, Chenopodium album, Geranium pusillum, Taraxacum officinale, Epilobium ciliatum, Lamium purpureum* and *Vicia cracca.*

The recommended doses for **apple orchards** are:

- 5 l/ha to reduce *Senecio vulgaris, Stellaria media, Capsella-bursa-pastoris, Galium aparine, Poa annua,*
- 7 l/ha to reduce *Chenopodium album, Geranium pusillum,*
- 8 l/ha to reduce *Taraxacum officinale, Epilobium ciliatum, Lamium purpureum.*

The recommended doses for **cherry orchards** are:

- 5 l/ha to reduce *Senecio vulgaris, Stellaria media, Poa annua, Vicia cracca,*
- 7 l/ha to reduce *Taraxacum officinale, Epilobium ciliatum.*

Comments of zRMS:	This is an Article 43 (of Reg. (EC) 1107/2009) application for the products ORKAN 350 SL/ SPRINTER 350 SL, following the renewal of the active substance glyphosate. Since this is an Article 43 application, it is inappropriate to consider new data or claims that are not directly required as part of the renewal of the active substance. Hence, with this application no new data or claims are considered. Also, this information's were assessed during first registration of ORKAN 350 SL

	/ SPRINTER 350 SL. Applicant submitted new data for apple and cherries. However, according to 43 Article this data should not been assessed during renewal process. If the applicant wishes to make changes to the label or GAP table compared to an earlier registration (R-133/2016d) then he should apply for an extension of use in accordance with Article 45. The expert will only use new data for apple trees, since the studies used for the first registration date from 2000 and 2001, which would not be compatible with the harmonisation arrangements. In the opinion of Evaluator, 6 new efficacy trials carried out on apples in 2019 showed that tested product effectively control weed species included in the label after previous registration. Because applications are made to the intrarows (inner strips between the trees within a row), application rates per ha are expressed per 'unit of treated surface area. Effevtiveness according to LWA approach is not required in this case, in the opinion of Evaluator. In the expert's opinion, on the basis of Article 43, no significant changes can be made to the label and GAP table in comparison with the earlier registration. Therefore, the classification of weed sensitivity should not be changed with a division into 3 doses: 5 l/ha, 7 l/ha and 8/ha instead of 2 doses: 5 l/ha and 7-8 l/ha (in line with the earlier release) Such changes should be made in the re-expansion mode of the registration, especially with the addition of two new weed species to the label. Trials presented for cherry will not be assessed for efficacy. Applicant should apply for an extension of the label, and at the same time these studies will be able to be evaluated. Only, as minor crop cherry can be accepted in the label (in line to first registration) We could not extension label for minor crops not included after first registration. So, hazelnuts, walnuts, nectarine, quince, medlar cannot be accepted according to Article 43.

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

Tested product- Orkan 350 SL contains two active ingredients: glyphosate and MCPA. According to HRAC (Herbicide Resistance Action Committee) classification glyphosate belongs to group G, inhibition of EPSP synthase (Chemical Family of glycines) and to 9th group of WSSA (Weed **S**cience **S**ociety of **A**merica). Evidence of resistance to glycines has been limited to 24 weed species globally. The first documented cases of weed resistance to glyphosate were found in Australia. Also in the areas of USA, Spain, Brazil, South Africa, Greece or Portugal, it was reported that: *Amaranthus palmeri* (Palmer Amaranth), *Amaranthus spinosus* (Spiny Amaranth), *Amaranthus tuberculatus (syn. rudis)* (Common Waterhemp), *Ambrosia artemisiifolia* (Common Ragweed), *Conyza bonariensis* (Hairy Fleabane), *Lolium multiflorum* (Italian Ryegrass), *Lolium rigidum* (Rigid Ryegrass), *Poa annua* (Annual Bluegrass) etc. may be resistant to the G-group herbicides. In Czech Republic (2007) and Poland (2010) only *Conyza Canadensis* (Horseweed) has been reported lately to develop resistance. However all cases of evolution of resistance especially in Australia were characterized by intensive use of the herbicide while no other effective weed control practices were used. According to HRAC classification MCPA belongs to group O, action like indole acetic acid (synthetic auxins), (Chemical Family of Phenoxy-carboxylic-acid). Evidence of resistance to synthetic auxins has been limited to 30 weed species globally. No cases of evolution of resistance to group O were reported in Poland. In the submitted efficacy trials no evidence of resistance to

Orkan 350 SL has been reported.
However, Good Agricultural Practices and Good Plant Protection Practices are the basis of the weed management strategy (EPPO Standard PP 2/1):
- select the correct active ingredient and product for the situation.
- follow label recommendations, particularly to ensure the treatment is made at the correct weed growth stage, under suitable climatic conditions and at the correct dosage. The minimum required dose should be applied but further dose reductions should be avoided since they can encourage a shift to tougher weed species. Timing of the application can be critical for perennial weeds, and it may be necessary to change the season of application each year to prevent a shift to species which are less susceptible at certain times of year.
- optimize the use of the range of agronomic tools to manage weed growth which are part of normal croor landscape management programmes. For example, crop rotation and cultivation or in non-crop areas such as roadsides, road and pavement sweepers. minimise the risk of spreading weed infestations. Ensure farm equipment is clean of soil and vegetation when moving between fields. Avoid introducing weeds seeds by using certified seed.
Where necessary mow/spray non-crop vegetation adjacent to field to prevent seed production. Good spraying practice should always be followed to attain effective weed control:
- spray equipment must be checked periodically (e.g. by authorized people).
- dose and spray accurately- calibrate the sprayer and make the correct amount of spray mix for the area to be treated.
- use the correct nozzles to maximise coverage of the weeds with minimum spray drift
- apply only under appropriate weather conditions, e.g. weeds are not stressed due to high temperatures, frost, drought or waterlogging.
- no rainfall falls during application or within two hours after application.
- suitable wind speed.
- monitor the weed control during the cropping season and look out for potential problems before they arise.

Comments of zRMS:	The applicant should provide a resistance risk assessment in line with EPPO PP 1/213 and the requirements of Article 43. **GLYPHOSATE** Glyphosate belongs to HRAC group G (Inhibition of EPSP synthase) and is part of the glycine chemical family. Glyphosate is an herbicide widely used in agriculture and non-crop situations for the control of a broad range of annual and perennial monocotyledonous and dicotyledonous weeds. Glyphosate is a systemic non-selective foliar applied herbicide belonging to the chemical group of the glycines. Glyphosate is taken up by green tissue of the leaves and stems of treated plants. It is transported systemically (via apoplastic and symplastic pathways) throughout the plant including the roots, rhizomes and stolons but especially to areas of metabolic activity within the plant (sinks), where it inhibits the shikimic acid pathway. Glyphosate binds to and blocks the activity of its target enzyme EPSPS (5-enolpyruvylshikimate-3-phosphate synthase), an enzyme of the aromatic amino acid biosynthetic pathway. The inhibition of this enzyme prevents the plant from synthesizing the essential aromatic amino acids needed for protein biosynthesis. EPSPS is present in plants, bacteria, and fungi, but not in animals and human beings. The overall worldwide classification of the resistance risk for Group G herbicides is considered to be moderate. Although it is apparent that the risk may be lower in Europe and in some MS where no resistance has yet been reported. The following table shows the current worldwide resistance weeds specifically to the herbicide glyphosate, including the individual cases (according to http://www.weedscience.org): Reported cases of resistance to glyphosate

	Year	Species	Country	MOAs	Actives	Situations
1	2005	*Sorghum halepense*	Argentina	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
2	2007	*Lolium perenne ssp. multiflorum*	Argentina	EPSP synthase inhibitors (G/9)	glyphosate	Cereals
3	2008	*Lolium perenne*	Argentina	EPSP synthase inhibitors (G/9)	glyphosate	Spring Barley, Soybean, Wheat
4	2008	*Cynodon hirsutus*	Argentina	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Soybean
5	2009	*Echinochloa colona*	Argentina	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Soybean
6	2010	*Lolium perenne ssp. multiflorum*	Argentina	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	glyphosate, iodosulfuron-methyl-sodium, pyroxsulam	Wheat
7	2012	*Eleusine indica*	Argentina	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Soybean, Fallow
8	2012	*Conyza bonariensis*	Argentina	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
9	2012	*Brassica rapa (=B. campestris)*	Argentina	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	imazapyr, metsulfuron-methyl, diclosulam, glyphosate	Soybean, Wheat
10	2013	*Amaranthus hybridus (syn: quitensis)*	Argentina	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
11	2014	*Digitaria insularis*	Argentina	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
12	2014	*Amaranthus hybridus (syn: quitensis)*	Argentina	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	imazethapyr, glyphosate	Corn (maize), Soybean
13	2015	*Sorghum halepense*	Argentina	ACCase inhibitors (A/1), EPSP synthase inhibitors (G/9)	haloxyfop-methyl, glyphosate	Soybean
14	2015	*Amaranthus palmeri*	Argentina	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
15	2016	*Amaranthus hybridus (syn: quitensis)*	Argentina	EPSP synthase inhibitors (G/9), Synthetic Auxins (O/4)	glyphosate, dicamba, 2,4-D	Soybean
16	2017	*Bromus catharticus*	Argentina	EPSP synthase inhibitors (G/9)	glyphosate	Wheat, Winter barley, Fallow
17	2017	*Urochloa panicoides*	Argentina	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Soybean
18	2019	*Carduus acanthoides*	Argentina	EPSP synthase inhibitors (G/9), Synthetic Auxins (O/4)	glyphosate, 2,4-D	Corn (maize), Soybean
19	2019	*Echinochloa crus-galli var. crus-galli*	Argentina	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize)
20	1997	*Lolium rigidum*	Australia (New South Wales)	EPSP synthase inhibitors (G/9)	glyphosate	Apples, Cereals, Roadsides, Wheat, Canola, Fencelines, Irrigation Channels, Around Buildings
21	2007	*Echinochloa colona*	Australia (New South Wales)	EPSP synthase inhibitors (G/9)	glyphosate	Fallow

	22	2008	*Urochloa panicoides*	Australia (New South Wales)	EPSP synthase inhibitors (G/9)	glyphosate	Wheat, Sorghum
	23	2010	*Chloris truncata*	Australia (New South Wales)	EPSP synthase inhibitors (G/9)	glyphosate	Fallow
	24	2010	*Conyza bonariensis*	Australia (New South Wales)	EPSP synthase inhibitors (G/9)	glyphosate	Industrial sites, Roadsides
	25	2014	*Sonchus oleraceus*	Australia (New South Wales)	EPSP synthase inhibitors (G/9)	glyphosate	Cotton, Fallow
	26	2015	*Chloris virgata*	Australia (New South Wales)	EPSP synthase inhibitors (G/9)	glyphosate	Fallow
	27	2017	*Poa annua*	Australia (New South Wales)	EPSP synthase inhibitors (G/9)	glyphosate	Golf courses
	28	2017	*Poa annua*	Australia (New South Wales)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9), Microtubule inhibitors (K1/3), Photosystem II inhibitors (C1/5), Unknown (Z/27)	endothall, bispyribac-sodium, rimsulfuron, simazine, glyphosate, propyzamide = pronamide, iodosulfuron-methyl-sodium, foramsulfuron	Golf courses
	29	2018	*Avena sterilis ssp. ludoviciana*	Australia (New South Wales)	EPSP synthase inhibitors (G/9)	glyphosate	Chickpea
	30	2009	*Echinochloa colona*	Australia (Queensland)	EPSP synthase inhibitors (G/9)	glyphosate	Fallow
	31	2011	*Conyza bonariensis*	Australia (Queensland)	EPSP synthase inhibitors (G/9)	glyphosate	Roadsides
	32	2014	*Brachiaria eruciformis*	Australia (Queensland)	EPSP synthase inhibitors (G/9)	glyphosate	Fallow
	33	2015	*Chloris virgata*	Australia (Queensland)	EPSP synthase inhibitors (G/9)	glyphosate	Fallow
	34	2018	*Avena fatua*	Australia (Queensland)	EPSP synthase inhibitors (G/9)	glyphosate	Chickpea
	35	2018	*Conyza sumatrensis*	Australia (Queensland)	EPSP synthase inhibitors (G/9)	glyphosate	Fallow
	36	2019	*Sorghum halepense*	Australia (Queensland)	EPSP synthase inhibitors (G/9)	glyphosate	Fallow
	37	1999	*Lolium rigidum*	Australia (South Australia)	EPSP synthase inhibitors (G/9)	glyphosate	Alfalfa, Cereals, Roadsides, Grapes, Clover, Fencelines, Irrigation Channels
	38	2008	*Lolium rigidum*	Australia (South Australia)	Carotenoid biosynthesis (unknown target) (F3/11), EPSP synthase inhibitors (G/9)	amitrole, glyphosate	Grapes
	39	2010	*Lolium rigidum*	Australia (South Australia)	ACCase inhibitors (A/1), ALS inhibitors (B/2), EPSP synthase inhibitors (G/9), Photosystem II inhibitors (C1/5), PSI Electron Diverter (D/22)	haloxyfop-methyl, clethodim, imazapyr, chlorsulfuron, atrazine, paraquat, glyphosate, iodosulfuron-methyl-sodium	Pasture seed
	40	2011	*Conyza bonariensis*	Australia (South Australia)	EPSP synthase inhibitors (G/9)	glyphosate	Roadsides

	41	2011	*Bromus diandrus*	Australia (South Australia)	EPSP synthase inhibitors (G/9)	glyphosate	Wheat, Fencelines
	42	2015	*Chloris virgata*	Australia (South Australia)	EPSP synthase inhibitors (G/9)	glyphosate	Roadsides
	43	2016	*Hordeum murinum ssp. glaucum*	Australia (South Australia)	EPSP synthase inhibitors (G/9)	glyphosate	Around Buildings
	44	2017	*Poa annua*	Australia (South Australia)	EPSP synthase inhibitors (G/9)	glyphosate	Golf courses
	45	1996	*Lolium rigidum*	Australia (Victoria)	EPSP synthase inhibitors (G/9)	glyphosate	Cereals, Wheat, Canola, Fencelines
	46	1999	*Lolium rigidum*	Australia (Victoria)	ACCase inhibitors (A/1), ALS inhibitors (B/2), EPSP synthase inhibitors (G/9), Microtubule inhibitors (K1/3)	diclofop-methyl, chlorsulfuron, glyphosate, trifluralin	Wheat
	47	2015	*Chloris truncata*	Australia (Victoria)	EPSP synthase inhibitors (G/9)	glyphosate	Roadsides
	48	2015	*Lactuca serriola*	Australia (Victoria)	EPSP synthase inhibitors (G/9)	glyphosate	Fallow
	49	2017	*Poa annua*	Australia (Victoria)	EPSP synthase inhibitors (G/9)	glyphosate	Golf courses
	50	2003	*Lolium rigidum*	Australia (Western Australia)	EPSP synthase inhibitors (G/9)	glyphosate	Cereals, Railways, Roadsides, Grapes, Fencelines
	51	2010	*Echinochloa colona*	Australia (Western Australia)	EPSP synthase inhibitors (G/9)	glyphosate	Cotton, Rice, Watermelon
	52	2010	*Raphanus raphanistrum*	Australia (Western Australia)	ALS inhibitors (B/2), Carotenoid biosynthesis inhibitors (F1/12), EPSP synthase inhibitors (G/9), Synthetic Auxins (O/4)	imazethapyr, chlorsulfuron, sulfometuron-methyl, metosulam, diflufenican, glyphosate, MCPA, 2,4-D	Fallow
	53	2013	*Lolium rigidum*	Australia (Western Australia)	EPSP synthase inhibitors (G/9), PSI Electron Diverter (D/22)	paraquat, glyphosate	Grapes
	54	2014	*Bromus rubens*	Australia (Western Australia)	EPSP synthase inhibitors (G/9)	glyphosate	Fallow
	55	2016	*Tridax procumbens*	Australia (Western Australia)	EPSP synthase inhibitors (G/9)	glyphosate	Sandalwood Plantation
	56	2017	*Lactuca saligna*	Australia (Western Australia)	EPSP synthase inhibitors (G/9)	glyphosate	Vegetables
	57	2007	*Eleusine indica*	Bolivia	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
	58	2003	*Lolium perenne ssp. multiflorum*	Brazil	EPSP synthase inhibitors (G/9)	glyphosate	Orchards, Soybean
	59	2005	*Conyza canadensis*	Brazil	EPSP synthase inhibitors (G/9)	glyphosate	Orchards, Soybean, Fruit
	60	2005	*Conyza bonariensis*	Brazil	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Soybean, Wheat, Fruit
	61	2008	*Digitaria insularis*	Brazil	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Soybean
	62	2010	*Conyza suma-*	Brazil	EPSP synthase	glyphosate	Corn (maize),

		trensis		inhibitors (G/9)		Soybean
63	2010	*Lolium perenne ssp. multiflorum*	Brazil	ACCase inhibitors (A/1), EPSP synthase inhibitors (G/9)	clethodim, glyphosate	Corn (maize), Soybean, Wheat
64	2011	*Conyza sumatrensis*	Brazil	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	chlorimuron-ethyl, glyphosate	Corn (maize), Soybean
65	2014	*Chloris elata*	Brazil	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
66	2015	*Amaranthus palmeri*	Brazil	EPSP synthase inhibitors (G/9)	glyphosate	Cotton
67	2016	*Eleusine indica*	Brazil	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Soybean, Wheat
68	2016	*Amaranthus palmeri*	Brazil	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	imazethapyr, chlorimuron-ethyl, cloransulam-methyl, glyphosate	Corn (maize), Cotton, Soybean
69	2017	*Lolium perenne ssp. multiflorum*	Brazil	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	glyphosate, iodosulfuron-methyl-sodium, pyroxsulam	Corn (maize), Soybean, Wheat
70	2017	*Eleusine indica*	Brazil	ACCase inhibitors (A/1), EPSP synthase inhibitors (G/9)	haloxyfop-methyl, fenoxaprop-P-ethyl, glyphosate	Corn (maize), Cotton, Soybean, Beans
71	2017	*Conyza sumatrensis*	Brazil	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9), PSI Electron Diverter (D/22)	chlorimuron-ethyl, paraquat, glyphosate	Soybean
72	2017	*Conyza sumatrensis*	Brazil	EPSP synthase inhibitors (G/9), PPO inhibitors (E/14), PSI Electron Diverter (D/22), PSII inhibitor (Ureas and amides) (C2/7), Synthetic Auxins (O/4)	diuron, paraquat, glyphosate, 2,4-D, saflufenacil	Soybean
73	2018	*Amaranthus hybridus (syn: quitensis)*	Brazil	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	chlorimuron-ethyl, glyphosate	Soybean
74	2012	*Kochia scoparia*	Canada (Alberta)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	thifensulfuron-methyl, tribenuron-methyl, glyphosate	Spring Barley, Wheat
75	2017	*Kochia scoparia*	Canada (Alberta)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9), Synthetic Auxins (O/4)	thifensulfuron-methyl, tribenuron-methyl, glyphosate, dicamba	Corn (maize), Lentils, Wheat, Canola, Peas, Winter barley, Fallow
76	2014	*Kochia scoparia*	Canada (Manitoba)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	thifensulfuron-methyl, tribenuron-methyl, glyphosate	Corn (maize), Soybean
77	2008	*Ambrosia trifida*	Canada (Ontario)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
78	2010	*Conyza canadensis*	Canada (Ontario)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
79	2011	*Conyza canadensis*	Canada (Ontario)	ALS inhibitors (B/2), EPSP	cloransulam-methyl, glyphosate	Soybean

				synthase inhibitors (G/9)		
80	2011	*Ambrosia trifida*	Canada (Ontario)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	cloransulam-methyl, glyphosate	Soybean
81	2012	*Ambrosia artemisiifolia*	Canada (Ontario)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	imazamethabenz-methyl, chlorimuron-ethyl, cloransulam-methyl, glyphosate	Soybean
82	2014	*Amaranthus tuberculatus (=A. rudis)*	Canada (Ontario)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	imazethapyr, glyphosate	Soybean
83	2017	*Amaranthus tuberculatus (=A. rudis)*	Canada (Ontario)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9), Photosystem II inhibitors (C1/5), PPO inhibitors (E/14)	imazethapyr, atrazine, lactofen, glyphosate	Corn (maize), Soybean
84	2017	*Amaranthus tuberculatus (=A. rudis)*	Canada (Ontario)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9), Photosystem II inhibitors (C1/5)	imazethapyr, atrazine, glyphosate	Corn (maize), Soybean
85	2017	*Amaranthus tuberculatus (=A. rudis)*	Canada (Ontario)	EPSP synthase inhibitors (G/9), Photosystem II inhibitors (C1/5)	atrazine, metribuzin, glyphosate	Corn (maize), Soybean
86	2017	*Brassica rapa (=B. campestris)*	Canada (Quebec)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Soybean
87	2012	*Kochia scoparia*	Canada (Saskatchewan)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	thifensulfuron-methyl, tribenuron-methyl, glyphosate	Spring Barley, Wheat, Canola
88	2001	*Lolium perenne ssp. multiflorum*	Chile	EPSP synthase inhibitors (G/9)	glyphosate	Orchards, Fruit
89	2002	*Lolium perenne ssp. multiflorum*	Chile	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	glyphosate-trimesium, glyphosate, iodosulfuron-methyl-sodium, flucarbazone-sodium	Wheat
90	2006	*Lolium perenne ssp. multiflorum*	Chile	ACCase inhibitors (A/1), EPSP synthase inhibitors (G/9)	haloxyfop-methyl, clodinafop-propargyl, diclofop-methyl, clethodim, glyphosate, pinoxaden	Lupins
91	2007	*Lolium perenne ssp. multiflorum*	Chile	ACCase inhibitors (A/1), ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	haloxyfop-methyl, clethodim, glyphosate, iodosulfuron-methyl-sodium, flucarbazone-sodium, tepraloxydim, pinoxaden	Spring Barley
92	2006	*Conyza canadensis*	China	EPSP synthase inhibitors (G/9)	glyphosate	Orchards
93	2010	*Eleusine indica*	China	EPSP synthase inhibitors (G/9)	glyphosate	Orchards
94	2004	*Parthenium hysterophorus*	Colombia	EPSP synthase inhibitors (G/9)	glyphosate	Fruit
95	2006	*Eleusine indica*	Colombia	EPSP synthase inhibitors (G/9)	glyphosate	Coffee, Corn (maize)
96	2006	*Conyza bonariensis*	Colombia	EPSP synthase inhibitors (G/9)	glyphosate	Coffee
97	2016	*Eleusine indica*	Colombia	EPSP synthase	paraquat, glyphosate	Corn (maize)

				inhibitors (G/9), PSI Electron Diverter (D/22)		
98	2019	*Chloris radiata*	Colombia	EPSP synthase inhibitors (G/9)	glyphosate	Rice
99	2010	*Eleusine indica*	Costa Rica	EPSP synthase inhibitors (G/9)	glyphosate	Pejibaye palm
100	2010	*Paspalum paniculatum*	Costa Rica	EPSP synthase inhibitors (G/9)	glyphosate	Banana and Plantain, Pejibaye palm
101	2007	*Conyza canadensis*	Czech Republic	EPSP synthase inhibitors (G/9)	glyphosate	Railways
102	2005	*Lolium rigidum*	France	EPSP synthase inhibitors (G/9)	glyphosate	Orchards, Grapes
103	2010	*Conyza sumatrensis*	France	EPSP synthase inhibitors (G/9)	glyphosate	Grapes
104	2016	*Conyza sumatrensis*	France	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	flazasulfuron, glyphosate, iodosulfuron-methyl-sodium, mesosulfuron-methyl, penoxsulam	Grapes
105	2019	*Conyza canadensis*	France	EPSP synthase inhibitors (G/9)	glyphosate	Grapes
106	2010	*Conyza bonariensis*	Greece	EPSP synthase inhibitors (G/9)	glyphosate	Orchards, Grapes, Olive
107	2012	*Conyza sumatrensis*	Greece	EPSP synthase inhibitors (G/9)	glyphosate	Orchards, Grapes, Olive
108	2012	*Conyza canadensis*	Greece	EPSP synthase inhibitors (G/9)	glyphosate	Orchards, Grapes
109	2016	*Lolium rigidum*	Greece	EPSP synthase inhibitors (G/9)	glyphosate	Orchards
110	2016	*Conyza canadensis*	Hungary	EPSP synthase inhibitors (G/9)	glyphosate	Grapes
111	2012	*Eleusine indica*	Indonesia	EPSP synthase inhibitors (G/9), PSI Electron Diverter (D/22)	paraquat, glyphosate	Oil Palm Nursery
112	2005	*Conyza bonariensis*	Israel	EPSP synthase inhibitors (G/9)	glyphosate	Roadsides
113	2007	*Lolium rigidum*	Israel	ACCase inhibitors (A/1), ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	clodinafop-propargyl, imazapyr, chlorsulfuron, tribenuron-methyl, sulfometuron-methyl, flumetsulam, metosulam, glyphosate, florasulam, iodosulfuron-methyl-sodium, mesosulfuron-methyl, pinoxaden, propoxycarbazone-sodium	Wheat
114	2007	*Lolium rigidum*	Italy	EPSP synthase inhibitors (G/9)	glyphosate	Orchards, Grapes
115	2008	*Lolium perenne ssp. multiflorum*	Italy	ACCase inhibitors (A/1), EPSP synthase inhibitors (G/9)	clodinafop-propargyl, cycloxydim, glyphosate, pinoxaden	Wheat
116	2011	*Conyza canadensis*	Italy	EPSP synthase inhibitors (G/9)	glyphosate	Orchards
117	2012	*Lolium perenne ssp. multiflorum*	Italy	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	glyphosate, iodosulfuron-methyl-sodium, mesosulfuron-methyl	Wheat
118	2011	*Lolium perenne ssp. multiflorum*	Japan	EPSP synthase inhibitors (G/9)	glyphosate	Rice Paddy Levee
119	2013	*Eleusine indica*	Japan	EPSP synthase inhibitors (G/9)	glyphosate	Rice Paddy Levee
120	2014	*Conyza cana-*	Japan	EPSP synthase	glyphosate	Railways

		densis		inhibitors (G/9)		
121	1997	*Eleusine indica*	Malaysia	ACCase inhibitors (A/1), EPSP synthase inhibitors (G/9)	fluazifop-P-butyl, glyphosate	Orchards
122	2005	*Hedyotis verticillata*	Malaysia	EPSP synthase inhibitors (G/9), PSI Electron Diverter (D/22)	paraquat, glyphosate	Palm oil
123	2009	*Eleusine indica*	Malaysia	ACCase inhibitors (A/1), EPSP synthase inhibitors (G/9), Glutamine synthase inhibitors (H/10), PSI Electron Diverter (D/22)	haloxyfop-methyl, fluazifop-P-butyl, butroxydim, paraquat, glyphosate, glufosinate-ammonium	Oil Palm Nursery
124	2010	*Leptochloa virgata*	Mexico	EPSP synthase inhibitors (G/9)	glyphosate	Orchards
125	2014	*Bidens pilosa*	Mexico	EPSP synthase inhibitors (G/9)	glyphosate	Lime, sour
126	2016	*Eleusine indica*	Mexico	EPSP synthase inhibitors (G/9)	glyphosate	Oranges
127	2016	*Amaranthus palmeri*	Mexico	EPSP synthase inhibitors (G/9)	glyphosate	Cotton
128	2017	*Parthenium hysterophorus*	Mexico	EPSP synthase inhibitors (G/9)	glyphosate	Oranges
129	2018	*Chloris barbata = (C. inflate)*	Mexico	EPSP synthase inhibitors (G/9)	glyphosate	Oranges
130	2012	*Lolium perenne ssp. multiflorum*	New Zealand	EPSP synthase inhibitors (G/9)	glyphosate	Grapes
131	2012	*Lolium perenne*	New Zealand	EPSP synthase inhibitors (G/9)	glyphosate	Grapes
132	2015	*Lolium perenne*	New Zealand	Carotenoid biosynthesis (unknown target) (F3/11), EPSP synthase inhibitors (G/9), Glutamine synthase inhibitors (H/10)	amitrole, glyphosate, glufosinate-ammonium	Grapes
133	2015	*Lolium perenne ssp. multiflorum*	New Zealand	Carotenoid biosynthesis (unknown target) (F3/11), EPSP synthase inhibitors (G/9), Glutamine synthase inhibitors (H/10)	amitrole, glyphosate, glufosinate-ammonium	Grapes
134	2005	*Digitaria insularis*	Paraguay	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Cotton, Soybean, Sunflower
135	2017	*Conyza sumatrensis*	Paraguay	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9), PSI Electron Diverter (D/22)	chlorimuron-ethyl, paraquat, glyphosate	Soybean
136	2018	*Bidens subalternans*	Paraguay	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
137	2010	*Conyza canadensis*	Poland	EPSP synthase inhibitors (G/9)	glyphosate	Railways
138	2010	*Conyza bonariensis*	Portugal	EPSP synthase inhibitors (G/9)	glyphosate	Orchards
139	2011	*Conyza canadensis*	Portugal	EPSP synthase inhibitors (G/9)	glyphosate	Olive

	140	2013	*Lolium perenne*	Portugal	EPSP synthase inhibitors (G/9)	glyphosate	Grapes
	141	2001	*Lolium rigidum*	South Africa	EPSP synthase inhibitors (G/9)	glyphosate	Grapes
	142	2003	*Conyza bonariensis*	South Africa	EPSP synthase inhibitors (G/9)	glyphosate	Orchards, Grapes
	143	2003	*Plantago lanceolata*	South Africa	EPSP synthase inhibitors (G/9)	glyphosate	Orchards, Grapes
	144	2003	*Lolium rigidum*	South Africa	ACCase inhibitors (A/1), EPSP synthase inhibitors (G/9), PSI Electron Diverter (D/22)	haloxyfop-methyl, paraquat, glyphosate, tepraloxydim	Grapes
	145	2017	*Conyza canadensis*	South Korea	EPSP synthase inhibitors (G/9)	glyphosate	Orchards
	146	2004	*Conyza bonariensis*	Spain	EPSP synthase inhibitors (G/9)	glyphosate	Orchards
	147	2006	*Conyza canadensis*	Spain	EPSP synthase inhibitors (G/9)	glyphosate	Orchards
	148	2006	*Lolium perenne ssp. multiflorum*	Spain	EPSP synthase inhibitors (G/9)	glyphosate	Orchards
	149	2006	*Lolium rigidum*	Spain	EPSP synthase inhibitors (G/9)	glyphosate	Orchards
	150	2009	*Conyza sumatrensis*	Spain	EPSP synthase inhibitors (G/9)	glyphosate	Orchards
	151	2016	*Lolium rigidum*	Spain	EPSP synthase inhibitors (G/9), PPO inhibitors (E/14)	oxyfluorfen, glyphosate	Olive
	152	2018	*Hordeum murinum ssp. leporinum*	Spain	EPSP synthase inhibitors (G/9)	glyphosate	Orchards, Olive
	153	2011	*Lolium perenne ssp. multiflorum*	Switzerland	EPSP synthase inhibitors (G/9)	glyphosate	Orchards
	154	2019	*Conyza sumatrensis*	Turkey	EPSP synthase inhibitors (G/9)	glyphosate	Peaches
	155	2008	*Amaranthus palmeri*	United States (Alabama)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
	156	2013	*Conyza canadensis*	United States (Alabama)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Cotton, Soybean
	157	2013	*Ambrosia artemisiifolia*	United States (Alabama)	EPSP synthase inhibitors (G/9)	glyphosate	Cotton
	158	2012	*Amaranthus palmeri*	United States (Arizona)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	pyrithiobac-sodium, glyphosate	Cotton
	159	2003	*Conyza canadensis*	United States (Arkansas)	EPSP synthase inhibitors (G/9)	glyphosate	Cotton
	160	2004	*Ambrosia artemisiifolia*	United States (Arkansas)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
	161	2005	*Ambrosia trifida*	United States (Arkansas)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
	162	2006	*Amaranthus palmeri*	United States (Arkansas)	EPSP synthase inhibitors (G/9)	glyphosate	Cotton, Soybean
	163	2007	*Sorghum halepense*	United States (Arkansas)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
	164	2008	*Lolium perenne ssp. multiflorum*	United States (Arkansas)	EPSP synthase inhibitors (G/9)	glyphosate	Wheat
	165	2015	*Amaranthus tuberculatus (=A. rudis)*	United States (Arkansas)	EPSP synthase inhibitors (G/9)	glyphosate	Cotton, Soybean
	166	2016	*Amaranthus*	United States	ALS inhibitors	imazethapyr, pyrithiobac-	Cotton, Soy-

			palmeri	(Arkansas)	(B/2), EPSP synthase inhibitors (G/9), Long chain fatty acid inhibitors (K3/15), Microtubule inhibitors (K1/3), PPO inhibitors (E/14)	sodium, flumetsulam, fomesafen, lactofen, acifluorfen-sodium, fluthiacet-methyl, carfentrazone-ethyl, glyphosate, pendimethalin, pyraflufen-ethyl, trifloxysulfuron-sodium, S-metolachlor	bean
	167	1998	*Lolium rigidum*	United States (California)	EPSP synthase inhibitors (G/9)	glyphosate	Orchards, Almonds
	168	2005	*Conyza canadensis*	United States (California)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Orchards, Roadsides, Grapes, Wheat, Fencelines
	169	2007	*Conyza bonariensis*	United States (California)	EPSP synthase inhibitors (G/9)	glyphosate	Roadsides
	170	2008	*Echinochloa colona*	United States (California)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Cotton, Orchards, Roadsides, Grapes, Fencelines
	171	2008	*Lolium perenne ssp. multiflorum*	United States (California)	EPSP synthase inhibitors (G/9)	glyphosate	Orchards, Roadsides
	172	2009	*Conyza bonariensis*	United States (California)	EPSP synthase inhibitors (G/9), PSI Electron Diverter (D/22)	paraquat, glyphosate	Corn (maize), Orchards, Roadsides, Grapes
	173	2013	*Poa annua*	United States (California)	EPSP synthase inhibitors (G/9)	glyphosate	Almonds
	174	2014	*Conyza canadensis*	United States (California)	EPSP synthase inhibitors (G/9), PSI Electron Diverter (D/22)	paraquat, glyphosate	Almonds
	175	2015	*Lolium perenne ssp. multiflorum*	United States (California)	ACCase inhibitors (A/1), EPSP synthase inhibitors (G/9), PSI Electron Diverter (D/22)	sethoxydim, paraquat, glyphosate	Alfalfa, Orchards, Grapes
	176	2015	*Amaranthus palmeri*	United States (California)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize)
	177	2016	*Lolium perenne ssp. multiflorum*	United States (California)	ACCase inhibitors (A/1), ALS inhibitors (B/2), EPSP synthase inhibitors (G/9), PSI Electron Diverter (D/22)	cyhalofop-butyl, fluazifop-P-butyl, fenoxaprop-P-ethyl, sethoxydim, clethodim, paraquat, glyphosate, imazamox, mesosulfuron-methyl	Alfalfa, Orchards
	178	2012	*Kochia scoparia*	United States (Colorado)	EPSP synthase inhibitors (G/9)	glyphosate	Cereals
	179	2000	*Conyza canadensis*	United States (Delaware)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
	180	2010	*Conyza canadensis*	United States (Delaware)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	thifensulfuron-methyl, tribenuron-methyl, glyphosate	Soybean, Wheat
	181	2012	*Amaranthus palmeri*	United States (Delaware)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
	182	2014	*Amaranthus palmeri*	United States (Delaware)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	chlorimuron-ethyl, glyphosate	Soybean
	183	2013	*Amaranthus palmeri*	United States (Florida)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Cotton
	184	2013	*Amaranthus*	United States	ALS inhibitors	glyphosate, imazapic	Soybean

			palmeri	(Florida)	(B/2), EPSP synthase inhibitors (G/9)		
	185	2014	*Parthenium hysterophorus*	United States (Florida)	EPSP synthase inhibitors (G/9)	glyphosate	Industrial sites, Railways, Roadsides, Fallow
	186	2005	*Amaranthus palmeri*	United States (Georgia)	EPSP synthase inhibitors (G/9)	glyphosate	Cotton, Soybean
	187	2008	*Amaranthus palmeri*	United States (Georgia)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	pyrithiobac-sodium, glyphosate	Cotton
	188	2010	*Amaranthus palmeri*	United States (Georgia)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9), Photosystem II inhibitors (C1/5)	pyrithiobac-sodium, atrazine, glyphosate, imazapic	Corn (maize)
	189	2014	*Kochia scoparia*	United States (Idaho)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Sugar beets
	190	2005	*Conyza canadensis*	United States (Illinois)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
	191	2006	*Amaranthus tuberculatus (=A. rudis)*	United States (Illinois)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	imazethapyr, chlorimuron-ethyl, glyphosate	Corn (maize), Soybean
	192	2009	*Amaranthus tuberculatus (=A. rudis)*	United States (Illinois)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9), Photosystem II inhibitors (C1/5), PPO inhibitors (E/14)	imazethapyr, chlorimuron-ethyl, atrazine, lactofen, glyphosate	Corn (maize), Soybean
	193	2010	*Amaranthus palmeri*	United States (Illinois)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Soybean
	194	2013	*Amaranthus palmeri*	United States (Illinois)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	imazethapyr, primisulfuron-methyl, glyphosate	Corn (maize), Soybean
	195	2016	*Amaranthus palmeri*	United States (Illinois)	EPSP synthase inhibitors (G/9), PPO inhibitors (E/14)	fomesafen, lactofen, glyphosate	Corn (maize), Soybean, Horseradish
	196	2002	*Conyza canadensis*	United States (Indiana)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
	197	2005	*Ambrosia trifida*	United States (Indiana)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
	198	2007	*Ambrosia artemisiifolia*	United States (Indiana)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
	199	2009	*Amaranthus tuberculatus (=A. rudis)*	United States (Indiana)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
	200	2012	*Amaranthus palmeri*	United States (Indiana)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Soybean
	201	2009	*Amaranthus tuberculatus (=A. rudis)*	United States (Iowa)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Soybean
	202	2009	*Ambrosia trifida*	United States (Iowa)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Soybean
	203	2011	*Conyza canadensis*	United States (Iowa)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Soybean
	204	2011	*Amaranthus tuberculatus (=A. rudis)*	United States (Iowa)	ALS inhibitors (B/2), EPSP synthase inhibi-	imazamethabenz-methyl, thifensulfuron-methyl, chlorimuron-ethyl, atra-	Corn (maize), Soybean

					tors (G/9), HPPD inhibitors (F2/27), Photosystem II inhibitors (C1/5)	zine, isoxaflutole, glyphosate, mesotrione	
205	2005	*Conyza canadensis*	United States (Kansas)		EPSP synthase inhibitors (G/9)	glyphosate	Cotton, Soybean
206	2006	*Amaranthus tuberculatus (=A. rudis)*	United States (Kansas)		EPSP synthase inhibitors (G/9)	glyphosate	Soybean
207	2006	*Ambrosia trifida*	United States (Kansas)		EPSP synthase inhibitors (G/9)	glyphosate	Soybean
208	2007	*Ambrosia artemisiifolia*	United States (Kansas)		EPSP synthase inhibitors (G/9)	glyphosate	Soybean
209	2007	*Kochia scoparia*	United States (Kansas)		EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Cotton, Soybean
210	2011	*Amaranthus palmeri*	United States (Kansas)		EPSP synthase inhibitors (G/9)	glyphosate	Cotton, Soybean
211	2013	*Kochia scoparia*	United States (Kansas)		ALS inhibitors (B/2), EPSP synthase inhibitors (G/9), Photosystem II inhibitors (C1/5), Synthetic Auxins (O/4)	chlorsulfuron, atrazine, glyphosate, dicamba	Corn (maize)
212	2013	*Kochia scoparia*	United States (Kansas)		EPSP synthase inhibitors (G/9), Synthetic Auxins (O/4)	glyphosate, dicamba, fluroxypyr	Corn (maize), Sorghum
213	2015	*Amaranthus palmeri*	United States (Kansas)		ALS inhibitors (B/2), EPSP synthase inhibitors (G/9), HPPD inhibitors (F2/27), Photosystem II inhibitors (C1/5), Synthetic Auxins (O/4)	chlorsulfuron, atrazine, glyphosate, 2,4-D, mesotrione	Sorghum
214	2001	*Conyza canadensis*	United States (Kentucky)		EPSP synthase inhibitors (G/9)	glyphosate	Soybean
215	2005	*Ambrosia trifida*	United States (Kentucky)		EPSP synthase inhibitors (G/9)	glyphosate	Soybean
216	2006	*Ambrosia artemisiifolia*	United States (Kentucky)		EPSP synthase inhibitors (G/9)	glyphosate	Soybean
217	2010	*Amaranthus tuberculatus (=A. rudis)*	United States (Kentucky)		EPSP synthase inhibitors (G/9)	glyphosate	Soybean
218	2010	*Amaranthus palmeri*	United States (Kentucky)		EPSP synthase inhibitors (G/9)	glyphosate	Soybean
219	2010	*Amaranthus palmeri*	United States (Louisiana)		EPSP synthase inhibitors (G/9)	glyphosate	Cotton
220	2010	*Sorghum halepense*	United States (Louisiana)		EPSP synthase inhibitors (G/9)	glyphosate	Soybean
221	2014	*Lolium perenne ssp. multiflorum*	United States (Louisiana)		EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Cotton, Soybean
222	2015	*Amaranthus tuberculatus (=A. rudis)*	United States (Louisiana)		EPSP synthase inhibitors (G/9)	glyphosate	Cotton, Soybean
223	2002	*Conyza canadensis*	United States (Maryland)		EPSP synthase inhibitors (G/9)	glyphosate	Soybean
224	2014	*Amaranthus palmeri*	United States (Maryland)		ALS inhibitors (B/2), EPSP	chlorimuron-ethyl, glyphosate	Soybean

				synthase inhibitors (G/9)		
225	2016	*Ambrosia artemisiifolia*	United States (Maryland)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9), PPO inhibitors (E/14)	cloransulam-methyl, fomesafen, glyphosate	Soybean
226	2007	*Conyza canadensis*	United States (Michigan)	EPSP synthase inhibitors (G/9)	glyphosate	Nurseries
227	2011	*Amaranthus palmeri*	United States (Michigan)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
228	2006	*Ambrosia trifida*	United States (Minnesota)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
229	2007	*Amaranthus tuberculatus (=A. rudis)*	United States (Minnesota)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
230	2007	*Amaranthus tuberculatus (=A. rudis)*	United States (Minnesota)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	imazapyr, thifensulfuron-methyl, glyphosate	Soybean
231	2008	*Ambrosia trifida*	United States (Minnesota)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	cloransulam-methyl, glyphosate	Soybean
232	2008	*Ambrosia artemisiifolia*	United States (Minnesota)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
233	2010	*Ambrosia artemisiifolia*	United States (Minnesota)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	imazapyr, cloransulam-methyl, glyphosate	Soybean
234	2016	*Amaranthus tuberculatus (=A. rudis)*	United States (Minnesota)	EPSP synthase inhibitors (G/9), PPO inhibitors (E/14)	fomesafen, lactofen, glyphosate	Corn (maize), Soybean
235	2003	*Conyza canadensis*	United States (Mississippi)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Cotton, Rice, Soybean
236	2005	*Lolium perenne ssp. multiflorum*	United States (Mississippi)	EPSP synthase inhibitors (G/9)	glyphosate	Cotton, Soybean
237	2007	*Conyza canadensis*	United States (Mississippi)	EPSP synthase inhibitors (G/9), PSI Electron Diverter (D/22)	paraquat, glyphosate	Soybean
238	2008	*Amaranthus palmeri*	United States (Mississippi)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	pyrithiobac-sodium, glyphosate	Cotton
239	2008	*Sorghum halepense*	United States (Mississippi)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
240	2010	*Eleusine indica*	United States (Mississippi)	EPSP synthase inhibitors (G/9)	glyphosate	Cotton
241	2010	*Ambrosia trifida*	United States (Mississippi)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
242	2010	*Amaranthus tuberculatus (=A. rudis)*	United States (Mississippi)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
243	2012	*Amaranthus spinosus*	United States (Mississippi)	EPSP synthase inhibitors (G/9)	glyphosate	Cotton
244	2014	*Ambrosia artemisiifolia*	United States (Mississippi)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
245	2002	*Conyza canadensis*	United States (Missouri)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Cotton, Soybean
246	2004	*Ambrosia artemisiifolia*	United States (Missouri)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean

	247	2005	*Amaranthus tuberculatus (=A. rudis)*	United States (Missouri)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9), PPO inhibitors (E/14)	imazethapyr, cloransulam-methyl, fomesafen, lactofen, acifluorfen-sodium, glyphosate, imazamox	Corn (maize), Soybean
	248	2008	*Amaranthus palmeri*	United States (Missouri)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Cotton, Soybean
	249	2009	*Ambrosia trifida*	United States (Missouri)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
	250	2009	*Amaranthus tuberculatus (=A. rudis)*	United States (Missouri)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	chlorimuron-ethyl, cloransulam-methyl, glyphosate	Corn (maize), Cotton, Soybean
	251	2010	*Poa annua*	United States (Missouri)	EPSP synthase inhibitors (G/9)	glyphosate	Turf
	252	2011	*Ambrosia trifida*	United States (Missouri)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	chlorimuron-ethyl, cloransulam-methyl, glyphosate	Corn (maize)
	253	2012	*Kochia scoparia*	United States (Montana)	EPSP synthase inhibitors (G/9)	glyphosate	Cereals
	254	2013	*Kochia scoparia*	United States (Montana)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	thifensulfuron-methyl, tribenuron-methyl, metsulfuron-methyl, glyphosate	Wheat
	255	2015	*Conyza canadensis*	United States (Montana)	EPSP synthase inhibitors (G/9)	glyphosate	Roadsides
	256	2015	*Salsola tragus*	United States (Montana)	EPSP synthase inhibitors (G/9)	glyphosate	Wheat, Fallow
	257	2006	*Conyza canadensis*	United States (Nebraska)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
	258	2010	*Ambrosia trifida*	United States (Nebraska)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
	259	2011	*Kochia scoparia*	United States (Nebraska)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Soybean
	260	2012	*Amaranthus tuberculatus (=A. rudis)*	United States (Nebraska)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
	261	2013	*Ambrosia artemisiifolia*	United States (Nebraska)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
	262	2016	*Amaranthus tuberculatus (=A. rudis)*	United States (Nebraska)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9), Photosystem II inhibitors (C1/5), PPO inhibitors (E/14)	imazethapyr, chlorimuron-ethyl, atrazine, fomesafen, lactofen, acifluorfen-sodium, glyphosate	Soybean
	263	2016	*Amaranthus palmeri*	United States (Nebraska)	EPSP synthase inhibitors (G/9), Photosystem II inhibitors (C1/5)	atrazine, glyphosate	Soybean
	264	2002	*Conyza canadensis*	United States (New Jersey)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
	265	2013	*Ambrosia artemisiifolia*	United States (New Jersey)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
	266	2014	*Amaranthus palmeri*	United States (New Jersey)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
	267	2016	*Ambrosia artemisiifolia*	United States (New Jersey)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9), PPO inhibitors (E/14)	cloransulam-methyl, fomesafen, glyphosate	Soybean
	268	2007	*Amaranthus palmeri*	United States (New Mexico)	EPSP synthase inhibitors (G/9)	glyphosate	Orchards, Pecan nut

	269	2003	*Conyza canadensis*	United States (North Carolina)	EPSP synthase inhibitors (G/9)	glyphosate	Cotton
	270	2005	*Amaranthus palmeri*	United States (North Carolina)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Cotton, Soybean
	271	2006	*Ambrosia artemisiifolia*	United States (North Carolina)	EPSP synthase inhibitors (G/9)	glyphosate	Cotton
	272	2009	*Lolium perenne ssp. multiflorum*	United States (North Carolina)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Cotton, Soybean
	273	2015	*Ambrosia artemisiifolia*	United States (North Carolina)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9), PPO inhibitors (E/14)	nicosulfuron, cloransulam-methyl, fomesafen, lactofen, acifluorfen-sodium, glyphosate	Corn (maize), Soybean
	274	2007	*Ambrosia artemisiifolia*	United States (North Dakota)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
	275	2010	*Amaranthus tuberculatus (=A. rudis)*	United States (North Dakota)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Soybean, Sugar beets
	276	2012	*Kochia scoparia*	United States (North Dakota)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Soybean
	277	2002	*Conyza canadensis*	United States (Ohio)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
	278	2003	*Conyza canadensis*	United States (Ohio)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	chlorimuron-ethyl, cloransulam-methyl, glyphosate	Soybean
	279	2004	*Ambrosia trifida*	United States (Ohio)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
	280	2006	*Ambrosia artemisiifolia*	United States (Ohio)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	chlorimuron-ethyl, cloransulam-methyl, glyphosate	Soybean
	281	2006	*Ambrosia trifida*	United States (Ohio)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	chlorimuron-ethyl, cloransulam-methyl, glyphosate	Soybean
	282	2008	*Amaranthus tuberculatus (=A. rudis)*	United States (Ohio)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Soybean
	283	2010	*Amaranthus palmeri*	United States (Ohio)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Soybean
	284	2009	*Conyza canadensis*	United States (Oklahoma)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
	285	2011	*Amaranthus tuberculatus (=A. rudis)*	United States (Oklahoma)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
	286	2013	*Kochia scoparia*	United States (Oklahoma)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize)
	287	2018	*Amaranthus palmeri*	United States (Oklahoma)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
	288	2004	*Lolium perenne ssp. multiflorum*	United States (Oregon)	EPSP synthase inhibitors (G/9)	glyphosate	Orchards
	289	2010	*Lolium perenne ssp. multiflorum*	United States (Oregon)	EPSP synthase inhibitors (G/9), Glutamine synthase inhibitors (H/10)	glyphosate, glufosinate-ammonium	Orchards
	290	2014	*Kochia scoparia*	United States (Oregon)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Sugar beets
	291	2016	*Salsola tragus*	United States (Oregon)	EPSP synthase inhibitors (G/9)	glyphosate	Fallow
	292	2003	*Conyza canadensis*	United States (Pennsylvania)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean

	293	2008	*Ambrosia artemisiifolia*	United States (Pennsylvania)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
	294	2013	*Amaranthus palmeri*	United States (Pennsylvania)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
	295	2006	*Amaranthus palmeri*	United States (South Carolina)	EPSP synthase inhibitors (G/9)	glyphosate	Cotton, Soybean
	296	2010	*Amaranthus palmeri*	United States (South Carolina)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	pyrithiobac-sodium, thifensulfuron-methyl, glyphosate, trifloxysulfuron-sodium	Corn (maize), Cotton, Soybean
	297	2007	*Ambrosia artemisiifolia*	United States (South Dakota)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Soybean
	298	2009	*Kochia scoparia*	United States (South Dakota)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Soybean
	299	2010	*Amaranthus tuberculatus (=A. rudis)*	United States (South Dakota)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Soybean
	300	2010	*Conyza canadensis*	United States (South Dakota)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Soybean
	301	2001	*Conyza canadensis*	United States (Tennessee)	EPSP synthase inhibitors (G/9)	glyphosate	Cotton, Soybean
	302	2006	*Amaranthus palmeri*	United States (Tennessee)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Cotton, Soybean
	303	2007	*Ambrosia trifida*	United States (Tennessee)	EPSP synthase inhibitors (G/9)	glyphosate	Cotton, Soybean
	304	2009	*Amaranthus palmeri*	United States (Tennessee)	ALS inhibitors (B/2), EPSP synthase inhibitors (G/9)	pyrithiobac-sodium, chlorimuron-ethyl, glyphosate	Cotton, Soybean
	305	2011	*Eleusine indica*	United States (Tennessee)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
	306	2011	*Amaranthus tuberculatus (=A. rudis)*	United States (Tennessee)	EPSP synthase inhibitors (G/9)	glyphosate	Cotton, Soybean
	307	2011	*Poa annua*	United States (Tennessee)	EPSP synthase inhibitors (G/9)	glyphosate	Golf courses, Turf
	308	2012	*Lolium perenne ssp. multiflorum*	United States (Tennessee)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize)
	309	2015	*Amaranthus palmeri*	United States (Tennessee)	EPSP synthase inhibitors (G/9), PPO inhibitors (E/14)	fomesafen, glyphosate	Soybean
	310	2006	*Amaranthus tuberculatus (=A. rudis)*	United States (Texas)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Cotton, Sorghum
	311	2011	*Amaranthus palmeri*	United States (Texas)	EPSP synthase inhibitors (G/9)	glyphosate	Cotton
	312	2015	*Helianthus annuus*	United States (Texas)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize)
	313	2005	*Conyza canadensis*	United States (Virginia)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Soybean
	314	2011	*Amaranthus palmeri*	United States (Virginia)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
	315	2015	*Salsola tragus*	United States (Washington)	EPSP synthase inhibitors (G/9)	glyphosate	Fallow
	316	2007	*Conyza canadensis*	United States (West Virginia)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Soybean
	317	2011	*Ambrosia trifida*	United States (Wisconsin)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Soybean
	318	2013	*Conyza canadensis*	United States (Wisconsin)	EPSP synthase inhibitors (G/9)	glyphosate	Soybean
	319	2013	*Amaranthus palmeri*	United States (Wisconsin)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Soybean

320	2013	*Amaranthus tuberculatus (=A. rudis)*	United States (Wisconsin)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Soybean
321	2016	*Amaranthus tuberculatus (=A. rudis)*	United States (Wisconsin)	EPSP synthase inhibitors (G/9), PPO inhibitors (E/14)	fomesafen, lactofen, glyphosate	Soybean
322	2017	*Ambrosia artemisiifolia*	United States (Wisconsin)	EPSP synthase inhibitors (G/9)	glyphosate	Corn (maize), Soybean
323	2014	*Kochia scoparia*	United States (Wyoming)	EPSP synthase inhibitors (G/9)	glyphosate	Sugar beets
324	2008	*Echinochloa colona*	Venezuela	ACCase inhibitors (A/1), EPSP synthase inhibitors (G/9)	fluazifop-P-butyl, glyphosate	Rice

There have been 324 unique cases of resistance reported to Group G, Some cross resistance to ACCase and ALS inhibitors has also been reported (e.g. *Lolium* in Italy).
As glyphosate is non-selective, there are not necessarily specific target weeds, but it will inevitably be used on weeds which have a high inherent resistance risk of developing resistance.
It is the zRMS' understanding that in certain growing systems where glyphosate is used as the only method of weed control (without mitigation measures, such as cultivation), the resistance risk is substantially higher due to over-reliance and repeated use. Glyphosate-tolerant crops were introduced in North and South America and Canada in the mid-1990s and resulting in a huge increase in area sprayed with glyphosate. This has led to an increase in glyphosate resistant weeds in the years that followed. The majority of the cases of resistance to herbicides have been reported in the USA and other countries who adopted these growing systems.
Therefore, it is possible that the resistance risk is lower in Europe. However, current changes in usage patterns are potentially increasing the risk of glyphosate resistance development. Although no resistance has been reported in many European countries, the zRMS still considers that the unmodified risk of glyphosate developing in the cMS is moderate to high.

MCPA

MCPA is effective on a range of annual broad-leaved weeds. MCPA containing products are used as selective herbicides to control broad-leaved weeds. MCPA is a herbicide and growth regulator with hormone-like action. MCPA is an auxin-type herbicide. Even though the auxin analog herbicides have been used very frequently for over half a century, there are relatively few reports of resistance of weeds to these compounds. The reason for this may well be their multifaceted mode of action. Therefore, auxin analog herbicides like MCPA are generally considered as "low risk" herbicides, concerning their potential in developing herbicide resistant weeds as they do not affect a single target site and they do not have long-term residual activity.
MCPA as growth regulator: due to the structure of the molecule and to its hormone-like action, no development of resistance is deemed possible.

The following table shows the current worldwide resistance weeds specifically to the herbicide MCPA, including the individual cases (according to http://www.weedscience.org):
Reported cases of resistance to MCPA:

	Year	Species	Country	MOAs	Actives	Situations
1	2005	*Sisymbrium*	Australia	ALS inhibitors (B/2),	imazethapyr, metsulfu-	Cereals

		orientale	(South Australia)	Synthetic Auxins (O/4)	ron-methyl, metosulam, MCPA, 2,4-D	
2	2006	*Raphanus raphanistrum*	Australia (South Australia)	ALS inhibitors (B/2), Carotenoid biosynthesis inhibitors (F1/12), Synthetic Auxins (O/4)	triasulfuron, diflufenican, MCPA, 2,4-D	Cereals
3	2010	*Raphanus raphanistrum*	Australia (Western Australia)	ALS inhibitors (B/2), Carotenoid biosynthesis inhibitors (F1/12), EPSP synthase inhibitors (G/9), Synthetic Auxins (O/4)	imazethapyr, chlorsulfuron, sulfometuron-methyl, metosulam, diflufenican, glyphosate, MCPA, 2,4-D	Fallow
4	1998	*Galeopsis tetrahit*	Canada (Alberta)	Synthetic Auxins (O/4)	dicamba, MCPA, fluroxypyr	Spring Barley, Cereals, Cropland, Wheat
5	1990	*Sinapis arvensis*	Canada (Manitoba)	Synthetic Auxins (O/4)	dicamba, MCPA, 2,4-D, dichlorprop, mecoprop, picloram	Spring Barley, Cropland, Wheat
6	2010	*Stellaria media*	China	Synthetic Auxins (O/4)	MCPA, fluroxypyr	Winter wheat
7	2011	*Descurainia sophia*	China	Synthetic Auxins (O/4)	MCPA	Winter wheat
8	2016	*Papaver rhoeas*	France	ALS inhibitors (B/2), Synthetic Auxins (O/4)	metsulfuron-methyl, MCPA, 2,4-D, iodosulfuron-methyl-sodium, mesosulfuron-methyl	Cereals
9	1985	*Cirsium arvense*	Hungary	Synthetic Auxins (O/4)	MCPA, 2,4-D	Pastures
10	2016	*Galium aparine*	Iran	Synthetic Auxins (O/4)	MCPA, 2,4-D	Wheat
11	2017	*Galium aparine*	Iran	ALS inhibitors (B/2), Synthetic Auxins (O/4)	sulfosulfuron, tribenuron-methyl, MCPA, 2,4-D, iodosulfuron-methyl-sodium, mesosulfuron-methyl	Wheat
12	1988	*Ranunculus acris*	New Zealand	Synthetic Auxins (O/4)	MCPA	Pastures
13	1997	*Carduus pycnocephalus*	New Zealand	Synthetic Auxins (O/4)	MCPA, 2,4-D, MCPB	Pastures
14	2010	*Ranunculus acris*	New Zealand	ALS inhibitors (B/2), Synthetic Auxins (O/4)	thifensulfuron-methyl, flumetsulam, MCPA	Pastures
15	1979	*Cirsium arvense*	Sweden	Synthetic Auxins (O/4)	MCPA	Cropland
16	2007	*Lactuca serriola*	United States (Washington)	Synthetic Auxins (O/4)	dicamba, MCPA, 2,4-D	Cereal

The Evaluator has proposed a management strategy as part of the proposed label, which includes the following modifiers:

- Use of integrated weed management
- Using the full rate at the correct timing in favourable conditions
- Assess the effectiveness of treatments to ensure control and prevent survivors.
- Monitor fields and ensure equipment is clean before moving to a new field.
- Use cultural practices including crop rotation and cultivation where appropriate
- Start with a clean field and control weeds early
- Enhance crop competitiveness
- Reactive measures for where resistance is identified (including eradication, prevention of spread, use of other herbicides with no resistance, grazing/cutting for feed/rotation or setting aside until next season if issue is widespread, and seeking advice for long term planning).

3.4 Adverse effects on treated crops (KCP 6.4)

3.4.1 Phytotoxicity to host crop (KCP 6.4.1)

Phytotoxicity assessment of the tested product (Orkan 350 SL) was made at the same time as studies of its effectiveness. Phytotoxicity assessment was carried out with the use of different cultivars (commercially grown varieties), which is compliant with PP 1/135 Phytotoxicity assessment.
A total of 9 phytotoxicity trials were carried out in 2009 (3 trials) and 2019 (6 trials) in different regions of Poland on apple (7 trials) and cherry (2 trials).
During the research, the visual observation, there was no impact of the measure on the cultivation of apple and cherry. No signs of phytotoxicity effects were observed in all trials. Phytotoxicity in all test-ed samples was 0%.

Phytotoxicity of product

No phytotoxicity symptom caused by Orkan 350 SL at the highest dose rate of 16 L/ha was recorded in all trials. No signs of phytotoxicity effects were observed in all trials. Phytotoxicity in all test-ed samples was 0%.

Comments of zRMS:	This is an Article 43 (of Reg. (EC) 1107/2009) application for the products ORKAN 350 SL/ SPRINTER 350 SL, following the renewal of the active substance glyphosate. Since this is an Article 43 application, it is inappropriate to consider new data or claims that are not directly required as part of the renewal of the active substance. Hence, with this application no new data or claims are considered. Also, this information's were assessed during first registration of ORKAN 350 SL / SPRINTER 350 SL. Applicant submitted new data for apple and cherries. However, according to 43 Article this data should not been assessed during renewal process. If the applicant wishes to make changes to the label or GAP table compared to an earlier registration (R-133/2016d) then he should apply for an extension of use in accordance with Article 33. However, the new studies carried out in 2019 on apple trees may help to re-establish the picture (since the previous ones were from 2000 and 2001) and emphasize that the product is safe to stand on these crops.

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

Orkan 350 SL applied at the rates 8.0 l/ha and 16.0 l/ha caused no changes in plant vigor.

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

Orkan 350 SL applied at the rates 8.0 l/ha and 16.0 l/ha had no influence on marketable and unmarketable yield quantity. Orkan 350 SL applied at the rates 8.0 l/ha and 16.0 l/ha had no influence on sugar content.

Comments of zRMS:	This is an Article 43 (of Reg. (EC) 1107/2009) application for the products ORKAN 350 SL/ SPRINTER 350 SL, following the renewal of the active substance glyphosate. Since this is an Article 43 application, it is inappropriate to consider new data or claims that are not directly required as part of the renewal of the active substance. Hence, with this application no new data or claims are considered. Also, this information's were assessed during first registration of ORKAN 350 SL / SPRINTER 350 SL. Applicant submitted new data for apple and cherries. However, according to 43

	Article this data should not been assessed during renewal process. If the applicant wishes to make changes to the label or GAP table compared to an earlier registration (R-133/2016d) then he should apply for an extension of use in accordance with Article 33. However, the new studies carried out in 2019 on apple trees may help to re-establish the picture (since the previous ones were from 2000 and 2001) and emphasize that the product is safe to stand on these crops.

3.4.4 Effects on transformation processes (KCP 6.4.4)

Details concerning the remains of the active substances glyphosate and MCPA are contained in Part B section 7.

Comments of zRMS:	This is an Article 43 (of Reg. (EC) 1107/2009) application for the products ORKAN 350 SL/ SPRINTER 350 SL, following the renewal of the active substance glyphosate. Since this is an Article 43 application, it is inappropriate to consider new data or claims that are not directly required as part of the renewal of the active substance. This part was assessed during previus registration process and does not need to be re-evaluated in an expert opinion.

3.4.5 Impact on treated plants or plant products to be used for propagation (KCP 6.4.5)

It was not presented in the research. Orchards are perennial plants and tested measure is not intended to protect seeds, grains, cuttings, tubers, rhizomes. No phytotoxicity symptoms occurring during the field trials suggest that product application in accordance with label recommendation has no negative impact on parts of plant used for propagating purposes.

Summary and conclusion

A total of 9 phytotoxicity trials were carried out in 2009 (3 trials) and 2019 (6 trials) in different regions of Poland on apple (7 trials) and cherry (2 trials). No signs of phytotoxicity effects were observed in all trials. Phytotoxicity in all test-ed samples was 0%. In all trials there was no changes in plant vigor or no influence on marketable and unmarketable yield quantity or no influence on sugar content.
Orchards are perennial plants and tested measure is not intended to protect seeds, grains, cuttings, tubers, rhizomes.

Comments of zRMS:	This is an Article 43 (of Reg. (EC) 1107/2009) application for the products ORKAN 350 SL/ SPRINTER 350 SL, following the renewal of the active substance glyphosate. Since this is an Article 43 application, it is inappropriate to consider new data or claims that are not directly required as part of the renewal of the active substance. This part was assessed during previus registration process and does not need to be re-evaluated in an expert opinion.

3.5 Observations on other undesirable or unintended side-effects (KCP 6.5)

3.5.1 Impact on succeeding crops (KCP 6.5.1)

Orchards are perennial crops. They can remain in the same post 10-15 years. There is no necessity to check impact on succeeding crops. Therefore the impact on succeeding plants in this case is irrelevant.

Comments of zRMS:	This is an Article 43 (of Reg. (EC) 1107/2009) application for the products ORKAN 350 SL/ SPRINTER 350 SL, following the renewal of the active substance glyphosate. Since this is an Article 43 application, it is inappropriate to consider new data or claims that are not directly required as part of the renewal of the active substance. This part was assessed during previus registration process and does not need to be re-evaluated in an expert opinion.

3.5.2 Impact on other plants including adjacent crops (KCP 6.5.2)

At the moment there was no danger in the application of glyphosate and MCPA on neighboring plants. Moreover, the strict adherence to all the rules during the herbicide techniques treatments as well as observance of GEP rules, it can protect the neighboring plants from potential adverse effects relating to the protection of the crop. It is crucial to take care when carrying the liquid spray drift during spraying as well as to keep the appropriate buffer-zone.

Comments of zRMS:	This is an Article 43 (of Reg. (EC) 1107/2009) application for the products ORKAN 350 SL/ SPRINTER 350 SL, following the renewal of the active substance glyphosate. Since this is an Article 43 application, it is inappropriate to consider new data or claims that are not directly required as part of the renewal of the active substance. This part was assessed during previus registration process and does not need to be re-evaluated in an expert opinion.

3.5.3 Effects on beneficial and other non-target organisms (KCP 6.5.3)

Assessments of beneficial organisms were not conducted due to low infestation levels.
Detailed studies on the possible adverse effects to beneficial organisms are submitted and summarised in Part B, Section 9 (Ecotoxicology).

Summary and conclusion

Orchards are perennial crops. They can remain in the same post 10-15 years. There is no necessity to determine waiting period between last application and sowing or planting of succeeding crops. Therefore succeeding crops are not an issue.
The strict adherence to all the rules during the herbicide techniques treatments as well as observance of GEP rules, it can protect the neighboring plants from potential adverse effects relating to the protection of the crop. It is crucial to take care when carrying the liquid spray drift during spraying as well as to keep the appropriate buffer-zone.
Assessments of beneficial organisms were not conducted due to low infestation levels.

Comments of zRMS:	This is an Article 43 (of Reg. (EC) 1107/2009) application for the products ORKAN 350 SL/ SPRINTER 350 SL, following the renewal of the active substance glyphosate. Since this is an Article 43 application, it is inappropriate to consider new data or claims that are not directly required as part of the renewal of the ac-

	tive substance. This part was assessed dyring previus registration process and does not need to be re-evaluated in an expert opinion.

3.6 Other/special studies

No additional information is considered relevant.

3.7 List of test facilities including the corresponding certificates

Table 3.7-1: List of test facilities

Test facility	Address	Certificate (Yes or No)
Fertico Sp. z o.o.	Goliany 43, 05-620 Błędów, Poland	Yes
Instytut Sadownictwa I Kwieciarstwa w Skierniewicach	Ul. Pomologiczna 18, 96-100 Skierniewice	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
3.2.3	Lisek J	2000	Ocena biologicznej skuteczno$ci środka Orkan 350 SL w sadach; Instytut Sadownictwa i Kwiaciarstwa w Skierniewicach, Polska; UNRS 9/2000/II/Herb. GEP Unpublished	N	Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim
3.2.3	Lisek J	2001	Ocena biologicznej skuteczno$ci środka Orkan 350 SL w sadach; Instytut Sadownictwa i Kwiaciarstwa w Skierniewicach, Polska; UNRS 6/2001/II/Herb. GEP Unpublished	N	Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim
3.2.3	Jacek Kopeć	2019	Efficacy of Orkan 350 SL on weed control in apple orchards, Poland 2019. Fertico Sp. z o.o. 208_01_F19_346 GEP Unpublished	N	Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim
3.2.3	Jacek Kopeć	2019	Efficacy of Orkan 350 SL on weed control in apple orchards, Poland 2019. Fertico Sp. z o.o. 208_02_F19_347 GEP Unpublished	N	Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim
3.2.3	Jacek Kopeć	2019	Efficacy of Orkan 350 SL on weed control in apple orchards, Poland 2019. Fertico Sp. z o.o. 208_03_F19_348 GEP	N	Synthos Agro Sp. z o. o. ul. Chemików 1 32-600

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner
			Unpublished		Oświęcim
3.2.3	Jacek Kopeć	2019	Efficacy of Orkan 350 SL on weed control in apple orchards, Poland 2019. Fertico Sp. z o.o. 208_04_F19_349 GEP Unpublished	N	Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim
3.2.3	Jacek Kopeć	2019	Efficacy of Orkan 350 SL on weed control in apple orchards, Poland 2019. Fertico Sp. z o.o. 208_05_F19_350 GEP Unpublished	N	Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim
3.2.3	Jacek Kopeć	2019	Efficacy of Orkan 350 SL on weed control in apple orchards, Poland 2019. Fertico Sp. z o.o. 208_06_F19_351 GEP Unpublished	N	Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim
3.2.3	Andrzej Ogrodniczek	2019	Efficacy of Orkan 350 SL on weed control in cherry orchards, Poland 2019. Fertico Sp. z o.o. 210_01_F19_356 GEP Unpublished	N	Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim
3.2.3	Andrzej Ogrodniczek	2019	Efficacy of Orkan 350 SL on weed control in cherry orchards, Poland 2019. Fertico Sp. z o.o. 210_02_F19_357 GEP Unpublished	N	Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim
3.2.3	Andrzej Ogrodniczek	2019	Efficacy of Orkan 350 SL on weed control in cherry orchards, Poland 2019. Fertico Sp. z o.o. 210_03_F19_358 GEP	N	Synthos Agro Sp. z o. o. ul. Chemików 1

Data point	Author(s)	Year	Title Company Report No. Source (where different from company) GLP or GEP status Published or not	Vertebrate study Y/N	Owner
			Unpublished		32-600 Oświęcim
3.2.3	Andrzej Ogrodniczek	2019	Efficacy of Orkan 350 SL on weed control in cherry orchards, Poland 2019. Fertico Sp. z o.o. 210_04_F19_359 GEP Unpublished	N	Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim
3.2.3	Lisek J	2009	Ocena fitotoksyczności herbicydu w sadzie jabłoniowym (Orkan 350 SL); Instytut Sadownictwa i Kwiaciarstwa w Skierniewicach, Polska; OR/16/2009/1/I GEP Unpublished	N	Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim
3.2.3	Lisek J	2009	Ocena fitotoksyczności herbicydu w sadzie jabłoniowym (Orkan 350 SL); Instytut Sadownictwa i Kwiaciarstwa w Skierniewicach, Polska; OR/16/2009/1/II GEP Unpublished	N	Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim
3.2.3	Lisek J	2009	Ocena fitotoksyczności herbicydu w sadzie jabłoniowym (Orkan 350 SL); Instytut Sadownictwa i Kwiaciarstwa w Skierniewicach, Polska; OR/16/2009/1/III GEP Unpublished	N	Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim
3.2.3	Jacek Kopeć	2019	Selectivity of Orkan 350 SL applied in term of control of weeds in apple, Poland 2019. Fertico Sp. z o.o. 209_01_F19_352 GEP Unpublished	N	Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim
3.2.3	Jacek Kopeć	2019	Selectivity of Orkan 350 SL applied in term of control of weeds in apple, Poland 2019. Fertico Sp. z o.o.	N	Synthos Agro Sp. z o. o. ul.

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
			209_02_F19_353 GEP Unpublished		Chemików 1 32-600 Oświęcim
3.2.3	Jacek Kopeć	2019	Selectivity of Orkan 350 SL applied in term of control of weeds in apple, Poland 2019. Fertico Sp. z o.o. 209_03_F19_354 GEP Unpublished	N	Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim
3.2.3	Jacek Kopeć	2019	Selectivity of Orkan 350 SL applied in term of control of weeds in apple, Poland 2019. Fertico Sp. z o.o. 209_04_F19_355 GEP Unpublished	N	Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim
3.2.3	Andrzej Ogrodniczek	2019	Selectivity of Orkan 350 SL applied in term of control of weeds in cherry, Poland 2019. Fertico Sp. z o.o. 211_01_F19_360 GEP Unpublished	N	Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim
3.2.3	Andrzej Ogrodniczek	2019	Selectivity of Orkan 350 SL applied in term of control of weeds in cherry, Poland 2019. Fertico Sp. z o.o. 211_02_F19_361 GEP Unpublished	N	Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim

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

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

The following tables are to be completed by MS

List of data submitted by the applicant and not relied on

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

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

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