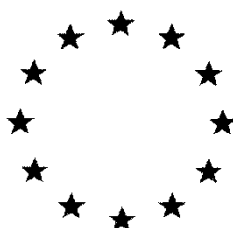


European Commission



**Draft Renewal Assessment Report prepared according to the Commission
Regulation (EU) N° 1107/2009**

BLOOD MEAL

Volume 3 – B.3 (PPP) – Certosan

Rapporteur Member State: Austria
Co-Rapporteur Member State: Lithuania

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When	What
2018/02	Original dossier submission by applicant
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Table of contents

B.3. DATA ON APPLICATION AND EFFICACY	4
B.3.1. FIELD OF USE ENVISAGED	4
B.3.2. EFFECTS ON HARMFUL ORGANISMS	4
B.3.3. DETAILS OF INTENDED USE	5
B.3.4. APPLICATION RATE AND CONCENTRATION OF THE ACTIVE SUBSTANCE	8
B.3.5. METHOD OF APPLICATION.....	8
B.3.6. NUMBER AND TIMING OF APPLICATIONS AND DURATION OF PROTECTION.....	8
B.3.7. NECESSARY WAITING PERIODS OR OTHER PRECAUTIONS TO AVOID PHYTOTOXIC EFFECTS ON SUCCEEDING CROPS.....	9
B.3.8. PROPOSED INSTRUCTIONS FOR USE	9
B.3.9. EFFECTIVENESS	9
B.3.10. INFORMATION ON THE DEVELOPMENT OF RESISTANCE	18
B.3.11. ADVERSE EFFECTS ON TREATED CROPS	18
B.3.12. OBSERVATIONS ON OTHER UNDESIRABLE OR UNINTENDED SIDE-EFFECTS	19
B.3.13. REFERENCES RELIED ON.....	20

B.3. DATA ON APPLICATION AND EFFICACY

Red Text: Information added by the evaluator (will be black in the final RAR).

B.3.1. FIELD OF USE ENVISAGED

The game repellent Certosan is to be used in forestry (deciduous and conifer forest trees) and in agriculture (horticulture: fruit production, ornamental crop production).

Certosan is intended to be used to protect terminal and lateral shoots of deciduous and coniferous forest trees, fruit crops (orchard trees), and ornamental plants (**annual plants, and perennials such as** shrubs and trees) against several game species.

Certosan is also registered with the trade names Plantskydd Deer Repellent or Certosol in different European countries.

B.3.2. EFFECTS ON HARMFUL ORGANISMS

The game repellent Certosan (active substance: blood meal) has no direct effect on the target organisms. The nature of a repellent is not to harm the target pest. However, due to its unpleasant taste and odour, Certosan prevents game damaging plants.

The harmful organisms are defined as follows:

Common names	Scientific name	EPPO Code
Fallow deer	<i>Cervus dama</i>	DAMADA
Red deer	<i>Cervus elaphus</i>	CERVEL
Roe deer	<i>Capreolus capreolus</i>	CAPRCA
Hare species	<i>Lepus sp</i>	LEPUSP
Wild rabbit	<i>Oryctolagus cuniculus</i>	ORYTCU
Common vole*	<i>Microtus arvalis</i>	MICRAR

*...was added since “mice” is listed as a pest in the GAP tables (according to doc. D-1), and MICRAR is indicated in doc. M-CA as well.

For further information refer to B.3.3. Details of Intended Use.

B.3.3. DETAILS OF INTENDED USE

PPP (product name/code)		Certosan	GAP, dated: 2018-03-26	
active substance 1		Blood meal	Formulation type:	WP
			Conc. of as 1:	998 g/kg
safener		no	Conc. of safener:	--
synergist		no	Conc. of synergist:	--
Applicant:		Flügel GmbH	professional use	<input checked="" type="checkbox"/>
Zone(s):		EU	non-professional use	<input checked="" type="checkbox"/>
Verified by MS:		Y		

1	2	3	4	5	6	7	8	10	11	12	13	14
Use- No.	Member state(s)	Crop and/ or situation (crop destination / purpose of crop)	F G 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. safener/synergist per ha e.g. recommended or mandatory tank mixtures
					Method / Kind	Timing / Growth stage of crop & season	Max. number (min. interval between applications) a) per use b) per crop/ season	kg product / ha a) max. rate per appl. b) max. total rate per crop/season	kg as/ha a) max. rate per appl. b) max. total rate per crop/season	Water L/ha min / max		
1	Central North	Deciduous and coniferous trees in forestry 3FORC	F	Game repellent ICERVF (CERVEL, DAMADA, CAPRCA, ALCSAL); 1LEPUF (LEPUSP, ORYTCU)	Coating with brush, Spraying or dipping individual plants, entire plants	all season	a) 1 b) 1	a) 19.8 b) 19.8	a) 19.8 b) 19.8	80-400	--	--

1	2	3	4	5	6	7	8	10	11	12	13	14
Use- No.	Member state(s)	Crop and/ or situation (crop destination / purpose of crop)	F G 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. safener/synergist per ha e.g. recommended or mandatory tank mixtures
					Method / Kind	Timing / Growth stage of crop & season	Max. number (min. interval between applications) a) per use b) per crop/ season	kg product / ha a) max. rate per appl. b) max. total rate per crop/season	kg as/ha a) max. rate per appl. b) max. total rate per crop/season	Water L/ha min / max		
2	Central North	Fruit trees in orchards 3FRUC	F	Game repellent 1CERVF (CERVEL, DAMADA, CAPRCA, ALCSAL); 1LEPUF (LEPUSP, ORYTCU)	Coating with brush, Spraying or dipping individual plants, entire plants	all season	a) 1 b) 1	a) 19.8 b) 19.8	a) 19.8 b) 19.8	80-400	--	--
3	Central North	Ornamental plants 3ORTC	F	Game repellent 1CERVF (CERVEL, DAMADA, CAPRCA); 1LEPUF (LEPUSP, ORYTCU)	Coating with brush, Spraying or dipping individual plants, entire plants	all season	a) 1 b) 1	a) 19.8 b) 19.8	a) 19.8 b) 19.8	80-400	--	--
4	North	Deciduous and coniferous trees in forestry 3FORC Agriculture and garden 3FRUC, 3ORTC	F	Game repellent 1CERVF (CERVEL, DAMADA, CAPRCA); 1LEPUF (LEPUSP, ORYTCU)	Coating with brush or dipping individual plants; entire plants	all season	a) 1 b) 1	a) 20 b) 20	a) 19.96 b) 19.96	5-15	--	--
5	North	Deciduous and coniferous trees in forestry 3FORC Agriculture and garden 3FRUC, 3ORTC	F	Mice Vole repellent MICRAR	Coating with brush or dipping individual plants; entire plants	all season	a) 1 b) 1	a) 20 b) 20	a) 19.96 b) 19.96	5-15	--	--

1	2	3	4	5	6	7	8	10	11	12	13	14
Use- No.	Member state(s)	Crop and/ or situation (crop destination / purpose of crop)	F G 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. safener/synergist per ha e.g. recommended or mandatory tank mixtures
					Method / Kind	Timing / Growth stage of crop & season	Max. number (min. interval between applications) a) per use b) per crop/ season	kg product / ha a) max. rate per appl. b) max. total rate per crop/season	kg as/ha a) max. rate per appl. b) max. total rate per crop/season	Water L/ha min / max		
6	North	Deciduous and coniferous trees in forestry 3FORC Agriculture and garden 3FRUC, 3ORTC	F	Mice Vole repellent MICRAR	Spraying individual plants; entire plants	all season	a) 1 b) 1	a) 20 b) 20	a) 19.96 b) 19.96	5-15	--	--

B.3.4. APPLICATION RATE AND CONCENTRATION OF THE ACTIVE SUBSTANCE

Certosan is already registered in Europe with a maximum application rate of 20 kg/ha. For the application of individual trees, the application rate is usually given not per ha, but per 1000 plants.

Application technique	Rate of Certosan	Water volume	concentration
Backpack sprayer: individual plants (standard practice)	500 g / 1000 plants 20 kg/ha	5 L / 1000 plants 200 l/ha	10 kg/hl
Coating/Painting: individual plants	500 g / 1000 plants	4-5 L / 1000 plants	10 kg/hl
Dipping: individual plants	750 g/ 1000 plants	deciduous trees: 10 L / 1000 plants	7.5 kg/hl
		coniferous trees, e.g. spruce: 7.5 L / 1000 plants	10 kg/hl

Since Certosan contains 99.8 % Blood meal, there is no significant difference between the application rates of the active substance and of the product.

B.3.5. METHOD OF APPLICATION

Certosan will be brushed or sprayed (with portable sprayers, single plant treatments; or with tractor-mounted spray equipment, broadcast application) onto the crop to be protected. Certosan can also be used during a dipping application of the whole plant before planting.

Certosan is a wettable powder and will be applied with different water volumes depending on the application technique. Also the application rate of Certosan (500 g- 750 g per 1000 plants) depends on the application technique.

The product shall be applied under dry and frost-free weather conditions and plants' surfaces to be treated shall be dry. However, morning dew or fog does not hamper the efficacy of the product. To obtain a long-lasting protective coat, it is crucial that the product has had enough time to dry off completely (usually 1-3 hours depending on atmospheric humidity).

B.3.6. NUMBER AND TIMING OF APPLICATIONS AND DURATION OF PROTECTION

Maximum number of applications and their timings:

One application is intended per crop and season.

The application could be performed all-the-year. Certosan usually is applied either in autumn before frost resp. snowfall (prevention of game browsing in winter), or at begin of the vegetation period (prevention of game browsing in spring and summer).

Growth stages of crops or plants to be protected:

This data point is not applicable. In general, plants in all growth stages can be treated. The preparation is non-toxic and an application could be performed all-the-year.

Red deer CERVEL can browse trees up to a height of 1.5 m, fallow deer DAMADA between 1.2-1.5 m and roe deer CAPRCA up to 1.2 m. The protection layer must be applied higher on the hill-side of the trees, as well as according to the expected snow depth.

Development stages of the harmful organism concerned:

This data point is not applicable. Game in nearly all development stages can damage trees and no development stages need to be defined.

Duration of protection afforded by each application:

The application could be performed all-the-year. The applicant claimed that an application during winter time is effective for 4 – 6 months. The efficiency of Certosan following a spring or summer treatment continues 6 – 8 weeks. The protection seems to be dependent of the temperature levels; on high temperatures the protection decreases earlier.

Duration of protection afforded by the maximum number of applications:

See above. According to the GAP-tables, only one application per crop and season is intended.

B.3.7. NECESSARY WAITING PERIODS OR OTHER PRECAUTIONS TO AVOID PHYTOTOXIC EFFECTS ON SUCCEEDING CROPS

Minimum waiting periods or other precautions between last application and sowing or planting succeeding crops:

This data point is not applicable as the product will be used as a protective cover on perennial trees in forestry and orchards. Succeeding crops are of no relevance for these intended uses of Certosan.

However, Certosan is intended to be applied also on ornamentals, currently without limitation to perennials. Since blood meal can be used also as a fertiliser, negative effects on succeeding crops are not expected.

Limitations on choice of succeeding crops: Not applicable

B.3.8. PROPOSED INSTRUCTIONS FOR USE

Instructions for use are provided on the product label. Labels of existing authorisations (in the national language) can be found in Document C of this submission.

B.3.9. EFFECTIVENESS

In support of this submission, the latest BAD (2013) for the product Certosan has been submitted (KCP 3/01). This BAD was drafted for the zonal assessment of Certosan within the Central zone (ZRMS Germany). No data from the Northern zone or the Southern zone were submitted.

Within this BAD a total 58 efficacy trials (thereof 30 GEP trials; the others carried out by official testing facilities prior to the implementation of GEP, most of them with poor and not EPPO-conform trial reports) has been evaluated, which was conducted between the year 1994 and 2013. Six trials out of these trials were carried out in the South-east climatic EPPO-zone. All Maritime zone trials were carried out in a single country (Germany).

Table A1- 1: Efficacy trials between 1994 and 2013: EPPO zones

Year	Country	Climatic EPPO-zone	Number of trials
1994	Germany	Maritime	11
1995	Germany	Maritime	16
1996	Germany	Maritime	1
1998	Germany	Maritime	2
2007	Germany	Maritime	2
2011	Germany	Maritime	5
	Slovakia	South-East	2
2012	Germany	Maritime	14
	Romania	South-East	1
	Hungary	South-East	1
2013	Romania	South-East	2

	Germany	Maritime	1
			52
			6 (supportive)
		Σ	58

Half of the trials were carried out to test efficacy of Certosan against game biting during summer, and the other half tested the effect on game biting during winter. All trials were carried out in forests, except for two each, carried out in “greens and parks” and orchards.

The trials were carried out with different tree species as well as against game biting caused by different animal species. On the trial site ungulate game as red, roe and fallow deer (*Cervus spp.*, *Capreolus capreolus*) were found as well as lagomorphs as hare (*Lepus spp.*) and wild rabbit (*Oryctolagus cuniculus*). No trials were presented assessing the effect against vole (MICRAR), and also no trials were available assessing damage caused by moose (*Alces alces*), even though both species were claimed as target organisms (see Volume 3 (AS) B.3.5)).

Results

Certosan is a game repellent which protects the treated parts of the tree against game browsing; the mode of action is its unpleasant smell and taste.

The trials were carried out with different tree species as well as against different ungulate (1CERVEL) and lagomorph game (*Lepus spp.*, *Oryctolagus cuniculus*). The product Certosan is a game repellent which prevents the game biting due to its unpleasant smell and taste. The nature of repellents is not to harm humans, animals or plants. The intended dose rate of Certosan is 0.5 kg/1000 trees, if individual trees are applied with a sprayer or brush. The actually applied dose depends e.g. on the plant size, on the height of the protection layer, on the game species,...

Winter game browsing on forest trees

26 efficacy trials were carried out in forests in Germany in the Maritime climatic EPPO-Zone (thereof 7 GEP) and three GEP-trials were conducted in Romania in the South-east climatic EPPO-zone.

Maritime zone: The test product Certosan performed excellent against game browsing caused by red deer (*Cervus elaphus*, CERVEL), roe deer (*Capreolus capreolus*, CAPRCA) and fallow deer (*Cervus dama*, DAMADA) as well as hare (*Lepus europaeus*, LEPUEU) and rabbit (*Oryctolagus cuniculus*, ORYTCU) with 84 % control (GEP trials: 85.8 %).

Across GEP-trials Certosan achieved 91.4 % control on conifer trees (n=4), and 78.3 % control on deciduous trees (n=3).

The reference products performed equal with 84 % (GEP-trials: 86.6%).

Performance of Certosan was comparable in South-east zone trials.

Summarized results are presented in Table A1- 2 and Table A1- 3.

Summer game browsing on forest trees

26 efficacy trials were carried out in forests in Germany in the Maritime climatic EPPO-Zone (thereof 12 GEP) and two GEP- trials were conducted in Slovenia and one in Romania in the South-east climatic EPPO-zone (EPPO PP 1/241(1)).

Maritime zone: The test product Certosan performed excellent against game browsing caused by red deer (*Cervus elaphus*, CERVEL), fallow deer (*Cervus dama*, DAMADA) and roe deer (*Capreolus capreolus*, CAPRCA) as well as hare (*Lepus europaeus*, LEPUEU) and rabbit (*Oryctolagus cuniculus*, ORYTCU) with 86 % control (GEP trials: 82.9 %).

Across GEP-trials Certosan achieved 88.8 % control on conifer trees (n=2), and on deciduous trees 81.8 % control (n=3).

The reference products performed equal with 82 % (GEP-trials: 86.1 %).

Performance of Certosan was comparable in South-east zone trials.

Summarized results are presented in Table A1- 4 and Table A1- 5.

Game browsing on fruit trees in orchards and vineyards

Two GEP efficacy trials were carried out in apple-orchards in Germany in the Maritime climatic EPPO-Zone and one GEP- trial was conducted in Hungary in the South-east climatic EPPO-zone in a vineyard.

Maritime zone: The test product Certosan performed well against game browsing caused by roe deer (*Capreolus capreolus*, CAPRCA) as well as hare (*Lepus europaeus*, LEPUEU) and rabbit (*Oryctolagus cuniculus*, ORYTCU) with 81 % control. The reference products performed better with 92 %.

South-east zone: At low pest pressure, Certosan and the reference product both achieved 83.5 % control of browsing caused by CAPRCA.

The applicant claimed that the repellent effect of Certosan is based on its unpleasant smell and taste for the game thus the results from the forest trees can be extrapolated and used for the fruit trees as well. However, on the contrary to forestry, where only economically relevant trees are protected, and others serve as feed, in orchards and vineyards all trees resp. grapevines have to be protected, and no alternative feed is available for the game. Therefore results of forest trials cannot be extrapolated to orchards and vineyards. Further data are needed to confirm the results gained from forest trials, both for orchards and vineyards. Furthermore, no trials are available with voles, Certosan is also claimed to be effective against, and known to be a serious pest in particular of young orchard plantations.

Summarized results are presented in Table A1- 6 and Table A1- 7

Game biting on ornamentals

Two efficacy trials were carried out in public green areas in Germany in the Maritime climatic EPPO-Zone (EPPO PP 1/241(1)).

The test product Certosan performed well against game browsing caused by wild rabbit (*Oryctolagus cuniculus*, ORYTCU) with 82 % control, however, at very low pest pressure. No reference product was assessed. The applicant claimed that the repellent effect of Certosan is based on its unpleasant smell and taste for the game thus the results from the forest trees can be extrapolated and used for the ornamentals as well.

However, on the contrary to forestry, where only economically relevant trees are protected, and others serve as feed, in ornamental production all plants have to be protected, and no alternative feed is available for the game. Therefore results of forest trials cannot be extrapolated to ornamentals. Further data are needed to confirm the results gained from forest trials, for ornamentals. In particular CAPRCA is known to seriously damage ornamental plants e.g. in larger public areas, or cemeteries. Furthermore, no trials are available with voles, Certosan is also claimed to be effective against.

Furthermore, progress reports from two park administrations tell about the good efficacy of blood meal against roe deer (*Capreolus capreolus*, CAPRCA). Remark evaluator: Only valid GEP trials are acceptable to demonstrate efficacy.

Summarized results are presented in Table A1- 8.

Table A1- 2: Summary data showing performance of Certosan of **winter game browsing damage** on coniferous and deciduous trees in forests in the maritime EPPO zone (non-GEP trials highlighted grey)

Reference	Report No.	Year	Country	EPPO zone	Application timing	Pest	Crop	Use	Browsing damage [%]			Efficacy [%]		
									TP [%]	RP [%]	U [%]	TP [%]	RP [%]	
Coniferous trees														
KCP 3/10	Reg.Doc. FLU1995-1	1995	DE	MAR	Winter game biting	CERVEL	Coniferous trees	Forestry	3.00	0.00	30.00	93.00	100.00	
KCP 3/24	Reg.Doc. FLU1995-2b	1995	DE	MAR	Winter game biting	CERVEL, CAPRCA	Coniferous trees	Forestry	25.85	21.11	56.08	54.00	62.00	
KCP 3/43	VP11-4-60D1	2012	DE	MAR	Winter game biting	CERVEL, CAPRCA, LEPUSP	Coniferous trees	Forestry	2.70	2.00	36.00	92.60	94.40	
KCP 3/44	VP11-4-60D2	2012	DE	MAR	Winter game biting		Coniferous trees	Forestry	4.00	6.00	42.00	90.50	85.70	
KCP 3/45	VP11-4-60D3	2012	DE	MAR	Winter game biting		Coniferous trees	Forestry	0.70	4.00	27.00	90.10	85.20	
KCP 3/47	VP11-4-60D5	2012	DE	MAR	Winter game biting		Coniferous trees	Forestry	3.00	8.30	39.00	92.30	78.60	
								n	6	6	6	6	6	
								Mean	6.54	6.90	38.35	85.42	84.32	
								Median	3.00	5.00	37.50	91.40	85.45	
								Min.	0.70	0.00	27.00	54.00	62.00	
								Max.	25.85	21.11	56.08	93.00	100.00	
								Mean GEP trials			36	91.4	86	
Deciduous trees														
KCP 3/11	GF-WF 94-1/1	1995	DE	MAR	Winter game biting		Deciduous trees	Forestry	0.60	1.90	7.60	92.00	75.00	
KCP 3/12	GF-WF 94-1/2	1995	DE	MAR	Winter game biting		Deciduous trees	Forestry	2.20	1.00	6.70	67.00	85.00	
KCP 3/13	GF-WF 94-2/1	1995	DE	MAR	Winter game biting		Deciduous trees	Forestry	1.60	1.00	12.40	87.00	92.00	
KCP 3/14	GF-WF 94-2/2	1995	DE	MAR	Winter game biting		Deciduous trees	Forestry	1.30	2.90	11.40	86.00	75.00	
KCP 3/15	GF-WF 94-3/1	1995	DE	MAR	Winter game biting		Deciduous trees	Forestry	7.70	9.40	52.00	85.00	82.00	
KCP 3/16	GF-WF 94-3/2	1995	DE	MAR	Winter game biting		Deciduous trees	Forestry	6.10	5.70	74.00	92.00	92.00	
KCP 3/17	GF-WF 94-4/1	1995	DE	MAR	Winter game biting		Deciduous trees	Forestry	10.00	7.50	61.00	84.00	88.00	
KCP 3/18	GF-WF 94-4/2	1995	DE	MAR	Winter game biting		Deciduous trees	Forestry	3.50	10.20	80.00	96.00	87.00	
KCP 3/19	GF-WF 94-5/1	1995	DE	MAR	Winter game biting		Deciduous trees	Forestry	5.70	1.30	32.90	83.00	96.00	
KCP 3/20	GF-WF 94-5/2	1995	DE	MAR	Winter game biting		Deciduous trees	Forestry	6.30	7.10	28.20	78.00	75.00	
KCP 3/21	GF-WF 94-6/1	1995	DE	MAR	Winter game biting		Deciduous trees	Forestry	7.30	6.00	50.00	85.00	88.00	
KCP 3/22	GF-WF 94-6/2	1995	DE	MAR	Winter game biting		Deciduous trees	Forestry	7.00	6.70	37.10	81.00	82.00	
KCP 3/23	Reg.Doc. FLU1995-2a	1995	DE	MAR	Winter game biting		Deciduous trees	Forestry	0.47	1.19	28.22	98.00	96.00	
KCP 3/25	Reg.Doc. FLU1995-2c	1995	DE	MAR	Winter game biting		Deciduous trees	Forestry	2.48	6.92	22.27	89.00	69.00	
KCP 3/26	Reg.Doc. FLU1996-1	1996	DE	MAR	Winter game biting		Deciduous trees	Forestry	3.20	6.70	14.30	77.60	53.20	
KCP 3/46	VP11-4-60D4	2012	DE	MAR	Winter game biting	LEPUSP	Deciduous trees	Forestry	0.00	0.00	37.00	100.00	100.00	
KCP 3/48	VP11-4-62D1	2012	DE	MAR	Winter game biting	CERVEL, CAPRCA,	Deciduous trees	Forestry	21.10	-	44.00	52.10	-	
KCP 3/49	VP11-4-62D2	2012	DE	MAR	Winter game biting		Deciduous trees	Forestry	5.00	7.00	20.00	82.80	75.90	

Reference	Report No.	Year	Country	EPPO zone	Application timing	Pest	Crop	Use	Browsing damage [%]			Efficacy [%]	
									TP [%]	RP [%]	U [%]	TP [%]	RP [%]
						LEPUSP							
								n	18	17	18	18	17
								Mean	5.09	4.85	34.39	84.19	83.01
								Median	4.25	6.00	30.56	85.00	85.00
								Min.	0.00	0.00	6.70	52.10	53.20
								Max.	21.10	10.20	80.00	100.00	100.00
								Mean GEP trials			33.7	78.3	88
Summary													
								n	24	23	24	24	23
								Mean	5.45	5.39	35.38	84.50	83.35
								Median	3.35	6.00	34.45	86.50	85.20
								Min.	0.00	0.00	6.70	52.10	53.20
								Max.	25.85	21.11	80.00	100.00	100.00
								Mean GEP trials			35	85.8	86.6

Table A1- 3: Summary data showing performance of Certosan of **winter game browsing damage** on coniferous and deciduous trees in forests in the south-eastern EPPO zone

Reference	Report No.	Year	Country	EPPO zone	Application timing	Pest	Crop	Use	Browsing damage			Efficacy [%]		
									TP [%]	RP [%]	U [%]	TP [%]	RP [%]	
Coniferous trees														
KCP 3/51	1640/05.06.2013	2013	RO	SE	Winter game biting	CERVSP	Coniferous trees	Forestry	0.00	0.00	5.00	100.00	100.00	
Deciduous trees														
KCP 3/50	1284/09.05.2012	2012	RO	SE	Winter game biting	CERVSP	Deciduous trees	Forestry	7.90	1.00	17.80	55.60	94.40	
KCP 3/52	1641/05.06.2013	2013	RO	SE	Winter game biting	CERVSP, ORYTCU	Deciduous trees	Forestry	2.30	7.70	28.00	91.80	72.50	
								n	2	2	2	2	2	
								Mean	5.10	4.35	22.90	73.70	83.45	
								Median	5.10	4.35	22.90	73.70	83.45	
								Min.	2.30	1.00	17.80	55.60	72.50	
								Max.	7.90	7.70	28.00	91.80	94.40	
Summary														
								n	3	3	3	3	3	
								Mean	3.40	2.90	16.93	82.47	88.97	
								Median	2.30	1.00	17.80	91.80	94.40	
								Min.	0.00	0.00	5.00	55.60	72.50	
								Max.	7.90	7.70	28.00	100.00	100.00	

Table A1- 4: Summary data showing performance of Certosan of summer game browsing damage on coniferous and deciduous trees in forests in the maritime EPPO zone

Reference	Report No.	Year	Country	EPPO zone	Application timing	Pest	Crop	Use	Browsing damage			Efficacy [%]		
									TP [%]	RP [%]	U [%]	TP [%]	RP [%]	
Coniferous trees														
KCP 3/02	FLU1994-1	1994	DE	MAR	Summer game biting	CERVEL, CAPRCA, LEPUEU	Coniferous trees	Forestry	1.00	2.00	9.00	89.00	78.00	
KCP 3/33	VP10-4-45D7	2011	DE	MAR	Summer game biting		Coniferous trees	Forestry	6.70	5.00	33.00	79.80	84.80	
KCP 3/42	VP11-4-35D7	2012	DE	MAR	Summer game biting		Coniferous trees	Forestry	6.70	1.00	29.00	97.70	96.60	
KCP 3/53	Reg.Doc FLU 1994-2a	1994	DE	MAR	Summer game biting		Coniferous trees	Forestry	0.00	0.00	28.40	100.00	100.00	
								n	4	4	4	4	4	
								Mean	3.60	2.00	24.85	91.63	89.85	
								Median	3.85	1.50	28.70	93.35	90.70	
								Min.	0.00	0.00	9.00	79.80	78.00	
								Max.	6.70	5.00	33.00	100.00	100.00	
								Mean GEP-trials			31	88.8	90.7	
Deciduous trees														
KCP 3/02	FLU1994-1	1994	DE	MAR	Summer game biting		Deciduous trees	Forestry	7.00	1.00	21.00	67.00	95.00	
KCP 3/03	FLU 94 Wi 1 a	1994	DE	MAR	Summer game biting		Deciduous trees	Forestry	0.00	3.70	6.30	100.00	41.00	
KCP 3/03	FLU 94 Wi 1 a	1994	DE	MAR	Summer game biting		Deciduous trees	Forestry	0.00	0.00	10.00	100.00	100.00	
KCP 3/04	FLU 94 Wi 1 b	1994	DE	MAR	Summer game biting		Deciduous trees	Forestry	0.00	5.10	14.70	100.00	65.00	
KCP 3/04	FLU 94 Wi 1 b	1994	DE	MAR	Summer game biting		Deciduous trees	Forestry	0.00	4.10	12.00	100.00	66.00	
KCP 3/05	FLU 94 Wi 1 c	1994	DE	MAR	Summer game biting		Deciduous trees	Forestry	1.60	3.00	11.00	85.00	73.00	
KCP 3/06	FLU 94 Wi 1 d	1994	DE	MAR	Summer game biting		Deciduous trees	Forestry	2.30	6.00	12.00	81.00	50.00	
KCP 3/07	240 a1 Nr. 1	1994	DE	MAR	Summer game biting		Deciduous trees	Forestry	2.40	2.40	7.10	68.00	68.00	
KCP 3/08	281 a2 Nr. 2	1994	DE	MAR	Summer game biting		Deciduous trees	Forestry	2.10	1.30	9.70	78.00	78.00	
KCP 3/09	283 a1 Nr. 3	1994	DE	MAR	Summer game biting		Deciduous trees	Forestry	0.80	1.70	7.40	89.00	77.00	
KCP 3/29	VP10-4-45D1	2011	DE	MAR	Summer game biting	CERVEL (migratory game), CAPRCA, LEPUEU, ORYTCU	Deciduous trees	Forestry	3.40	3.10	31.70	89.30	90.20	
KCP 3/30	VP10-4-45D4	2011	DE	MAR	Summer game biting	CERVEL (migratory game), CAPRCA, LEPUEU	Deciduous trees	Forestry	5.00	2.30	40.00	87.50	94.20	
KCP 3/31	VP10-4-45D5	2011	DE	MAR	Summer game biting	CAPRCA, LEPUEU	Deciduous trees	Forestry	10.30	8.70	30.00	65.60	71.10	

Reference	Report No.	Year	Country	EPPO zone	Application timing	Pest	Crop	Use	Browsing damage			Efficacy [%]	
									TP [%]	RP [%]	U [%]	TP [%]	RP [%]
KCP 3/32	VP10-4-45D6	2011	DE	MAR	Summer game biting	CAPRCA, LEPUEU	Deciduous trees	Forestry	7.00	8.30	35.00	80.00	76.20
KCP 3/36	VP11-4-35D1	2012	DE	MAR	Summer game biting	CERVEL, CAPRCA, LEPUSP	Deciduous trees	Forestry	4.70	5.00	53.00	91.20	90.60
KCP 3/37	VP11-4-35D2	2012	DE	MAR	Summer game biting	CERVEL, CAPRCA, LEPUSP	Deciduous trees	Forestry	22.00	8.00	51.00	56.90	84.30
KCP 3/38	VP11-4-35D3	2012	DE	MAR	Summer game biting	CERVEL, CAPRCA, LEPUSP	Deciduous trees	Forestry	7.30	8.70	46.00	84.10	81.20
KCP 3/39	VP11-4-35D4	2012	DE	MAR	Summer game biting	CERVEL, CAPRCA, LEPUSP, ORYTCU	Deciduous trees	Forestry	3.30	5.00	30.00	88.90	83.30
KCP 3/40	VP11-4-35D5	2012	DE	MAR	Summer game biting	CERVEL, CAPRCA, LEPUSP	Deciduous trees	Forestry	5.70	3.30	52.00	89.10	93.60
KCP 3/41	VP11-4-35D6	2012	DE	MAR	Summer game biting	CERVEL, CAPRCA, ORYTCU	Deciduous trees	Forestry	6.30	4.70	42.00	84.90	86.50
KCP 3/54	Reg.Doc FLU 1994-2b	1994	DE	MAR	Summer game biting		Deciduous trees	Forestry	0.00	0.00	10.60	100.00	100.00
KCP 3/55	Reg.Doc FLU 1994-2c	1994	DE	MAR	Summer game biting		Deciduous trees	Forestry	0.00	0.00	21.50	100.00	100.00
								n	22	22	22	22	22
								Mean	4.15	3.88	25.18	85.70	80.19
								Median	2.85	3.50	21.25	88.20	82.25
								Min.	0.00	0.00	6.30	56.90	41.00
								Max.	22.00	8.70	53.00	100.00	100.00
								Mean GEP-trials			41.1	81.8	85.1
Summary													
								n	26	26	26	26	26
								Mean	4.06	3.59	25.13	86.62	81.68
								Median	2.85	3.20	24.95	88.95	83.80
								Min.	0.00	0.00	6.30	56.90	41.00
								Max.	22.00	8.70	53.00	100.00	100.00
											39.4	82.9	86.1

Table A1- 5: Summary data showing performance of Certosan of summer game browsing damage on deciduous trees in forests in the south-eastern EPPO zone

Reference	Report No.	Year	Country	EPPO zone	Application timing	Crop	Use	Browsing damage			Efficacy [%]	
								TP [%]	RP [%]	U [%]	TP [%]	RP [%]
Deciduous trees												
KCP 3/34	NLC LVU 03/2011	2011	SI	SE	Summer game biting	Deciduous trees	Forestry	12.90	11.20	45.40	71.60	75.30
KCP 3/35	NLC LVU 04/2011	2011	SI	SE	Summer game biting	Deciduous trees	Forestry	17.10	3.20	83.40	79.50	96.20
							n	2	2	2	2	2
							Mean	15.00	7.20	64.40	75.55	85.75
							Median	15.00	7.20	64.40	75.55	85.75
							Min.	12.90	3.20	45.40	71.60	75.30
							Max.	17.10	11.20	83.40	79.50	96.20

Table A1- 6: Summary data showing performance of Certosan of summer game browsing damage on **trees in orchards** in the maritime EPPO zone

Reference	Report No.	Year	Country	EPPO zone	Application timing	Pest	Use	Browsing damage			Efficacy [%]	
								TP [%]	RP [%]	U [%]	TP [%]	RP [%]
KCP 3/56	VP06-4-104D1	2007	DE	MAR	Winter game biting	CAPRCA, LEPUEU, ORYTCU	Orchards/MABSD	14.00	8.00	41.00	83.00	91.00
KCP 3/57	VP06-4-104D2	2007	DE	MAR	Winter game biting		Orchards/MABSD	18.00	6.00	42.00	78.00	93.00
							n	2		2		
							Mean	1.40		41.5	80.5	92.00

Table A1- 7: Summary data showing performance of Certosan of summer game browsing damage in **vineyards** in the south-eastern EPPO zone

Reference	Report No.	Year	Country	EPPO zone	Application timing	Pest	Use	Browsing damage			Efficacy [%]	
								TP [%]	RP [%]	U [%]	TP [%]	RP [%]
KCP 3/58	Z/51/1/2012	2012	HU	SE	Summer game biting	CAPRCA	Orchards vineyard/VITVI	1.40	1.40	8.50	83.53	83.53

Table A1- 8: Summary data showing performance of Certosan of summer game browsing damage on coniferous and deciduous trees in ornamentals in the maritime EPPO zone

Reference	Report No.	Year	Country	EPPO zone	Application timing	Pest	Crop	Use	Browsing damage		Efficacy [%]
									TP [%]	U [%]	TP [%]
Coniferous trees											
KCP 3/28	VP98-4-24D2	1998	DE	MAR	Summer game biting		Coniferous trees	Orchards/Ornamentals	10.00	20.00	50.00
Deciduous trees											
KCP 3/27	VP98-4-24D1	1998	DE	MAR	Summer game biting	ORYTCU	Deciduous trees	Ornamentals/ROSSS	2.00	30.00	93.00
KCP 3/28	VP98-4-24D2	1998	DE	MAR	Summer game biting		Deciduous trees	Ornamentals/BEGSS	0.00	5.00	100.00
KCP 3/28	VP98-4-24D2	1998	DE	MAR	Summer game biting		Deciduous trees	Ornamentals DAHSS	0.00	10.00	100.00
KCP 3/28	VP98-4-24D2	1998	DE	MAR	Summer game biting		Coniferous trees	Ornamentals LOUSS	10.00	20.00	50.00
KCP 3/28	VP98-4-24D2	1998	DE	MAR	Summer game biting		Deciduous trees	OrnamentalsSALSS	5.00	10.00	50.00
KCP 3/28	VP98-4-24D2	1998	DE	MAR	Summer game biting		Deciduous trees	Ornamentals TAGSS	0.00	15.00	100.00
							n		6	6	6
							Mean		2.83	15.00	82.17
							Median		1.00	12.50	96.50
							Min.		0.00	5.00	50.00
							Max.		10.00	30.00	100.00

B.3.10. INFORMATION ON THE DEVELOPMENT OF RESISTANCE

Certosan is a repellent which is effective by smell and taste due to the active substance blood meal. The unpleasant taste and odour prevents game from browsing. Certosan coats the surface of the plants and so animals will not ingest the product in large quantities. The repellent does not kill or harm the animals, thus metabolic effects are unlikely.

Therefore typical resistance or cross-resistance mechanisms as known from chemical active substances will not occur. However, even though the presumption of a habituation effect is unlikely, it cannot completely be excluded.

In forestry, only the economically relevant trees will be protected with the game repellent and other trees and shrubs stayed unprotected serving game finds alternative feed. But if there is lack of food in winter game is able to migrate to places with a better availability of feed. The game populations are no isolated populations. The selection pressure of a game repellent is very low thus and the likelihood of developing of resistance.

In fruit production and in ornamental plant production all plants will be treated to prevent damage and economic losses. Furthermore, at fenced sites migration is limited. Therefore habituation is more likely there.

Game repellents with the active ingredient blood meal have been used for several decades. No incidence of game species resistant against Certosan, or habituated to Certosan, was reported.

B.3.11. ADVERSE EFFECTS ON TREATED CROPS

In support of this submission, the latest BAD (2013) for the product Certosan has been submitted (KCP 3/01). This BAD was drafted for the zonal assessment of Certosan within the Central zone (ZRMS Germany). **No data from the Northern zone were submitted.**

Phytotoxicity

In 53 efficacy trials, **thereof 25 GEP**, and in one **GEP**-selectivity trial the selectivity of Certosan was observed. No signs of phytotoxicity of the test product were visible on coniferous and deciduous trees as well as on fruit trees or ornamental plants with the intended dose rate as well as with 2-3 times higher dose rates (assessed on forests tree species only). Thus, Certosan seems to be safe to plants.

Quality of yield

No data are available on the possible impact of Certosan on the quality of fresh fruit, grapes, or on odour and appearance of ornamentals.

In the BAD the applicant stated that “the quality of the harvested wood is not affected by the application of Certosan, rather it has been protected from being destroyed by game browsing. The formulation does not penetrate into the wooden core of the tree, but stays on the surface and poses a barrier unattractive to biting by game.

Between the application of the game repellent and the harvest of the trees is an interval of several decades thus it is unlikely that the pesticide has any negative impact on the yield and on the quality.

In orchards no edible parts will be contaminated by Certosan since the product will be applied at vegetation start in spring.”

This rationale can be agreed for forest trees only.

A negative impact on the quality of yield of fruit trees/grapevines due to the awful smell and taste of the product cannot be excluded a priori. Furthermore, the application of the product is known to causes a reddish spray residue, therefore quality of e.g. perennial ornamentals is negatively affected. In case of application in Christmas trees and ornamental branches (in forestry or in ornamental production), impairment of smell or appearance should be considered in good time in the context of cultural management.

Processing

No data are available on the possible impact of Certosan on processing (both physical procedures as well as microbial fermentation).

In the BAD the applicant stated that “Certosan has no impact on the processing procedure of the treated tree. Tree parts will be covered by the game repellent. The tree will be left in the forest for many more years and be

harvested eventually. It is not anticipated that remaining traces of game repellent (if any) will have a consequence on the processing procedure.

In orchards no edible parts will be contaminated by Certosan since the product will be applied at vegetation start in spring.”

This rationale can be agreed for forest trees only.

According to the GAP tables, applications in orchards (and vineyards) are not limited to spring applications. Even though a direct effect on microbial fermentation is unlikely, a negative impact on the quality of processed fruits cannot be excluded.

In ornamentals, processing is not relevant.

Yield

No data are available on the possible impact of Certosan on yield.

In the BAD the applicant stated that “Between the application of the game repellent Certosan to prevent game browsing and the harvest are decades. Therefore it is not possible to express the benefit of an application with a game repellent as an increase of yield. The benefit of a game repellent to prevent game damage is seen in savings of cost for new planting and maintenance. A second benefit of a game repellent is the possibility of the preservation of the diversity in forests. No negative impact has the application of Certosan on fruit trees or ornamentals.”

A negative impact on yield is unlikely.

B.3.12. OBSERVATIONS ON OTHER UNDESIRABLE OR UNINTENDED SIDE-EFFECTS

Adverse effects on beneficial organisms (other than bees)

Study results according to the toxicity to beneficial organisms showed that Certosan is not toxic for arthropods. For detailed information on test results, please refer to B.3 (CP) Section 10.

Adverse effects on parts of plant used for propagating purposes

Certosan will be applied on parts of forest trees, on fruit trees and grapevines, and on ornamental plants. Forest trees are then protected from game browsing and will develop into mature trees after many years of growth. The treated parts will not be used for propagating purposes.

Propagation is common practice in fruit tree and grapevine production, as well as in ornamental production. Even coniferous trees may be propagated by cuttings. However, due to the demonstrated crop safety of the product, any negative impact on propagation is unlikely.

Impact on succeeding crops

There are no succeeding crops in forestry and orchards. This data point is not applicable. Furthermore, blood meal can be used in organic farming as a fertiliser.

Certosan will be applied on parts of trees in forestry, orchards and on ornamental plants. In forestry, young trees are then protected from game browsing and will develop into mature trees after many years of growth. In fruit and ornamental production, not only young trees, but also older plantations (e.g. vineyards) have to be protected. Regarding ornamentals, according to the GAP tables, the uses are not limited to perennial woody plants, thus also annual plants are included, and succeeding crops may occur.

However, negative effects on succeeding crops are not expected, since blood meal can be used also as a fertilizer.

Impact on other plants including adjacent crops

Certosan will be applied in forestry, orchards and ornamentals. The parts of individual trees of forestal or commercial significance will be treated with a single plant application. Also, an application with tractor mounted sprayers is currently registered. A negative impact by drift on other plants is highly unlikely, due to crop safety of the product.

B.3.13. REFERENCES 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	Data protection claimed Y/N	Justification if data protection is claimed	Owner	Previously used Y/N If yes, old data point
KCP 3/01	Reh, P.	2013	Biological Assessment Dossier – Certosan Versuchswesen Pflanzenschutz, Germany Report No.: not stated Report date: 2013-08-31 Non-GEP, unpublished	N	Y	New study	FLU	Y ¹
	Anonymus	1994	Wildschadensverhütungsmittel Forstl. Forschungsanstalt Eberswalde e.V., Abt. Waldschutz Reg.Doc. FLU1994-1 GEP: yes unpublished	N	N		FLU	Y ¹
	Anonymus	1995	Wildschadensverhütungsmittel Forstl. Forschungsanstalt Eberswalde e.V., Abt. Waldschutz Reg.Doc. FLU1995-1 GEP: yes unpublished	N	N		FLU	Y ¹
	Anonymus	1995	Amtliche Mittelprüfung, Certosan gegen Wildverbiß Niedersächsische Forstliche Versuchsanstalt, Göttingen Report no. GF-WF 94-X/X (12 trials) GEP: yes unpublished	N	N		FLU	Y ¹
	Find'o, S.	2011	Trial Report: Deer repellent National Forest Centre, Forest Research Institute Zvolen Report no. NLC LVU 1-2011 GEP: yes unpublished	N			FLU	Y ¹
	Krüger, F.	1994	Mittelprüfung 1994: Certosan Niedersächsische Forstliche Versuchsanstalt Study no. FLU 94 Wi 1 GEP: yes unpublished	Y	Y		FLU	Y ¹
IIIA 6.1.3	Ohlmeyer, Veldmann	1994	Protokoll zur Prüfung des Mittels "Certosan" auf Wirksamkeit gegen Wildverbiß. Forstliche Landesanstalt Sachsen-Anhalt Reg.Doc. FLU1994-2 GEP: yes unpublished	Y	Y		FLU	Y ¹
	Reh, P.	1998	Efficacy of the repellent Certosan versus game bit of rabbits in ornamental plants in Germany 1998 Versuchswesen Pflanzenschutz Report no. VP98-4-24	Y	Y		FLU	Y ¹

			GEP: yes unpublished					
KCP 3/29	Reh, P.	2011	An evaluation of the efficacy of Flügel weiß for fraying protection and of the efficacy of Flügel weiß and Certosan against game biting in summer in forestry in Germany 2010 Versuchswesen Pflanzenschutz, Germany Report No.: VP10-4-45D1 Report date: 2011-06-23 GEP, unpublished	N	Y	New study	FLU	Y ¹
KCP 3/30	Reh, P.	2011	An evaluation of the efficacy of Flügel weiß for fraying protection and of the efficacy of Flügel weiß and Certosan against game biting in summer in forestry in Germany 2010 Versuchswesen Pflanzenschutz, Germany Report No.: VP10-4-45D4 Report date: 2011-06-23 GEP, unpublished	N	Y	New study	FLU	Y ¹
KCP 3/31	Reh, P.	2011	An evaluation of the efficacy of Flügel weiß for fraying protection and of the efficacy of Flügel weiß and Certosan against game biting in summer in forestry in Germany 2010 Versuchswesen Pflanzenschutz, Germany Report No.: VP10-4-45D5 Report date: 2011-06-23 GEP, unpublished	N	Y	New study	FLU	Y ¹
KCP 3/32	Reh, P.	2011	An evaluation of the efficacy of Flügel weiß for fraying protection and of the efficacy of Flügel weiß and Certosan against game biting in summer in forestry in Germany 2010 Versuchswesen Pflanzenschutz, Germany Report No.: VP10-4-45D6 Report date: 2011-06-23 GEP, unpublished	N	Y	New study	FLU	Y ¹
KCP 3/33	Reh, P.	2011	An evaluation of the efficacy of Flügel weiß for fraying protection and of the efficacy of Flügel weiß and Certosan against game biting in summer in forestry in Germany 2010 Versuchswesen Pflanzenschutz, Germany Report No.: VP10-4-45D7 Report date: 2011-06-23 GEP, unpublished	N	Y	New study	FLU	Y ¹
KCP 3/34	Find'o, S.	2011	Trial Report NLC LVÚ 1 – 2011: Deer repellent National Forest Centre, Forest Research Institute, Slovakia Report No.: NLC LVU 03/2011 Report date: 2011-09-20 GEP, unpublished	N	Y	New study	FLU	Y ¹

KCP 3/35	Find'o, S.	2011	Trial Report NLC LVU 1 – 2011: Deer repellent National Forest Centre, Forest Research Institute, Slovakia Report No.: NLC LVU 04/2011 Report date: 2011-09-20 GEP, unpublished	N	Y	New study	FLU	Y ¹
KCP 3/36	Reh, P.	2012	An evaluation of the efficacy of Flügel weiß for fraying protection and of the efficacy of Flügel weiß and Certosan against game biting in summer in forestry in Germany 2010 Versuchswesen Pflanzenschutz, Germany Report No.: VP11-35D1 Report date: 2012-10-24 GEP, unpublished	N	Y	New study	FLU	Y ¹
KCP 3/37	Reh, P.	2012	An evaluation of the efficacy of Flügel weiß for fraying protection and of the efficacy of Flügel weiß and Certosan against game biting in summer in forestry in Germany 2010 Versuchswesen Pflanzenschutz, Germany Report No.: VP11-35D2 Report date: 2012-10-24 GEP, unpublished	N	Y	New study	FLU	Y ¹
KCP 3/38	Reh, P.	2012	An evaluation of the efficacy of Flügel weiß for fraying protection and of the efficacy of Flügel weiß and Certosan against game biting in summer in forestry in Germany 2010 Versuchswesen Pflanzenschutz, Germany Report No.: VP11-35D3 Report date: 2012-10-24 GEP, unpublished	N	Y	New study	FLU	Y ¹
KCP 3/39	Reh, P.	2012	An evaluation of the efficacy of Flügel weiß for fraying protection and of the efficacy of Flügel weiß and Certosan against game biting in summer in forestry in Germany 2010 Versuchswesen Pflanzenschutz, Germany Report No.: VP11-35D4 Report date: 2012-10-24 GEP, unpublished	N	Y	New study	FLU	Y ¹
KCP 3/40	Reh, P.	2012	An evaluation of the efficacy of Flügel weiß for fraying protection and of the efficacy of Flügel weiß and Certosan against game biting in summer in forestry in Germany 2010 Versuchswesen Pflanzenschutz, Germany Report No.: VP11-35D5 Report date: 2012-10-24 GEP, unpublished	N	Y	New study	FLU	Y ¹
KCP 3/41	Reh, P.	2012	An evaluation of the efficacy of Flügel weiß for fraying	N	Y	New study	FLU	Y ¹

			protection and of the efficacy of Flügel weiß and Certosan against game biting in summer in forestry in Germany 2010 Versuchswesen Pflanzenschutz, Germany Report No.: VP11-35D6 Report date: 2012-10-24 GEP, unpublished					
KCP 3/42	Reh, P.	2012	An evaluation of the efficacy of Flügel weiß for fraying protection and of the efficacy of Flügel weiß and Certosan against game biting in summer in forestry in Germany 2010 Versuchswesen Pflanzenschutz, Germany Report No.: VP11-35D7 Report date: 2012-10-24 GEP, unpublished	N	Y	New study	FLU	Y ¹
KCP 3/43	Reh, P.	2012	An evaluation of the efficacy of game repellents against winter game biting in forestry in Germany 2011/2012. Application technique: spraying Versuchswesen Pflanzenschutz, Germany Report No.: VP11-60D1 Report date: 2012-10-24 GEP, unpublished	N	Y	New study	FLU	Y ¹
KCP 3/44	Reh, P.	2012	An evaluation of the efficacy of game repellents against winter game biting in forestry in Germany 2011/2012. Application technique: spraying Versuchswesen Pflanzenschutz, Germany Report No.: VP11-60D2 Report date: 2012-10-24 GEP, unpublished	N	Y	New study	FLU	Y ¹
KCP 3/45	Reh, P.	2012	An evaluation of the efficacy of game repellents against winter game biting in forestry in Germany 2011/2012. Application technique: spraying Versuchswesen Pflanzenschutz, Germany Report No.: VP11-60D3 Report date: 2012-10-24 GEP, unpublished	N	Y	New study	FLU	Y ¹
KCP 3/46	Reh, P.	2012	An evaluation of the efficacy of game repellents against winter game biting in forestry in Germany 2011/2012. Application technique: spraying Versuchswesen Pflanzenschutz, Germany Report No.: VP11-60D4 Report date: 2012-10-24 GEP, unpublished	N	Y	New study	FLU	Y ¹
KCP 3/47	Reh, P.	2012	An evaluation of the efficacy	N	Y	New study	FLU	Y ¹

			of game repellents against winter game biting in forestry in Germany 2011/2012. Application technique: spraying Versuchswesen Pflanzenschutz, Germany Report No.: VP11-60D5 Report date: 2012-10-24 GEP, unpublished					
KCP 3/48	Reh, P.	2012	An evaluation of the minimum effective dose of Certosan as protection agent against winter game biting in forestry in Germany 2011/2012 Versuchswesen Pflanzenschutz Report No.: VP11-4-62D1 Report date: 2012-10-24 GEP, unpublished	N	Y	New study	FLU	Y ¹
KCP 3/49	Reh, P.	2012	An evaluation of the minimum effective dose of Certosan as protection agent against winter game biting in forestry in Germany 2011/2012 Versuchswesen Pflanzenschutz Report No.: VP11-4-62D2 Report date: 2012-10-24 GEP, unpublished	N	Y	New study	FLU	Y ¹
KCP 3/50	Sorin, S.	2012	Evaluation the effectiveness FLU00XY501 and Flügolla 62 repellents in order to protect the deciduous seedlings against damage caused by game (deer, roe deer) during the winter. Academy of Agricultural and Forestry Sciences, Romania Report No.: 1284/09.05.2012 Report date: 2012-05-08 GEP, unpublished	N	Y	New study	FLU	Y ¹
KCP 3/51	Sorin, S.	2013	Report on biological evaluation of the products: Flügol Weiss, FLU00XY509 and Certosan. Academy of Agricultural and Forestry Sciences, Romania Report No.: 1640/05.06.2013 Report date: 2013-03-31 GEP, unpublished	N	Y	New study	FLU	Y ¹
KCP 3/52	Sorin, S.	2013	Report on biological evaluation of the products: Flügol Weiss, FLU00XY509 and Certosan. Academy of Agricultural and Forestry Sciences, Romania Report No.: 1641/05.06.2013 Report date: 2013-03-27 GEP, unpublished	N	Y	New study	FLU	Y ¹
KCP 3/56	Reh, P.	2007	Vergleichende Untersuchung von Wildrepellentien gegen Knospenverbiß durch Rehwild sowie durch Hase und Kaninchen im Obstbau in Deutschland 2006-2007 Versuchswesen Pflanzenschutz, Germany Report No.: VP06-4-104D1 Report date: 2007-06-21	N	Y	New study	FLU	Y ¹

			GEP, unpublished					
KCP 3/57	Reh, P.	2007	Vergleichende Untersuchung von Wildrepellentien gegen Knospenverbiß durch Rehwild sowie durch Hase und Kaninchen im Obstbau in Deutschland 2006-2007 Versuchswesen Pflanzenschutz, Germany Report No.: VP06-4-104D2 Report date: 2007-06-21 GEP, unpublished	N	Y	New study	FLU	Y ¹
KCP 3/58	Garai, G. A	2012	Report on Zoocide Trial: Investigation of Certosan game repellent product in grapevine. Plant protection and soil conservation directorate of government office of BAZ county department for pest diagnosis, Miskole Report No.: Z/51/1/2012 Report date: 2013-09-27 GEP, unpublished	N	Y	New study	FLU	Y ¹

FLU = Flügel GmbH, Germany

¹ Product assessment on national level (Zonal assessment Central zone)