

98/8 Doc IIIA section No.	7.5.4.1/02	Acute toxicity to honey bees and other beneficial arthropods, for example predators
91/414 Annex	II	Bees: Acute toxicity
Point addressed	8.3.1.1	

		Official use only
Reference point (location) in dossier	7.5.4.1/02	
Title:	PP321: Effects on honey bees (<i>Apis mellifera</i>) foraging on simulated honeydew on winter wheat, 1985	
Project/Report number:	RJ0464B	
Author(s):	Gough, H.J., Collins, I.G. and Wilkinson, W.	
Date of report:	1986	
Published:	Not published	
Testing facility:	Jealott's Hill Research Station, ICI Plant Protection Division, Bracknell, UK	
Test substance:	<i>Lambda</i> -Cyhalothrin (PP321) 5% EC formulation	
Study dates	Mid June to mid August 1985	
GLP:	Yes	
Deficiencies:	None.	
Reliability indicator	1.	

	Official use only
<p>Materials and methods: The hazard of formulated <i>lambda</i>-Cyhalothrin to honey bees foraging on aphid honeydew on cereals has been determined in a semi-field (cage) study. Tunnels were erected on a plot of winter wheat at green-ear stage and the plots of wheat within each of the tunnels further divided into 4 sub-plots. There were two replicate trials (Trial 1 and 2) carried out consecutively using four tunnels per trial. The treatment rates used were: control (water only), the toxic standard (dimethoate) applied at a rate of 500 g a.s./ha, and the 5% w/v EC formulation of <i>lambda</i>-Cyhalothrin applied at rates of 7.5 and 15 g a.s./ha. The insecticide treatments were applied to half the crop in each tunnel only, the other half being sprayed with water only (control). Additionally, one tunnel was used for a third trial in which <i>lambda</i>-Cyhalothrin was applied at a rate of 15 g a.s./ha to all four sub-plots in the tunnel. A hive of bees was placed in the same position in each tunnel. A dead bee trap was attached to the front of each hive through which all worker bees entering or leaving the hive had to pass. Sucrose solution was sprayed onto the wheat at regular intervals as a food source for the bees, simulating aphid honeydew. A dish of pollen was also provided and pollen was additionally sprinkled at each hive entrance daily as a supplementary food supply. A dish of clean water (with pebbles in to prevent the bees from drowning), was provided in each tunnel for the bees to drink from. Assessments were made on the following parameters: mortality, foraging, activity at the hive entrance, brood assessment and hive weights.</p>	
<p>Findings:</p>	

The results of the trials are summarised below:

Mortality: High mortality was observed in the colonies in the tunnels treated with dimethoate (toxic standard). By contrast the mortality levels in the *lambda*-Cyhalothrin treatments did not increase significantly above control mortality. In Trial 3, the most severe of the three trials with *lambda*-Cyhalothrin applied at 15 g a.s./ha to the whole area of crop, mortality was low throughout with no indication of any effects from the treatment.

Foraging: Pre-treatment counts showed similar levels of foraging activity between different tunnels and between the two ends of the same tunnel. In Trial 1, following the spray at 16:00 h the total number of bees foraging in the *lambda*-Cyhalothrin treated tunnels fell in comparison with the water-treated control tunnel with the overall reduction due mainly to a drop in numbers on the insecticide-treated ends. Total numbers foraging remained low in comparison with the controls on Day 1 although this was not significant. The preference of the bees for the water-sprayed end was very marked. The effects were still evident at 10:30 h on Day 2, but were gone by 12:30 h. In Trial 2 there was a significant decrease in the daily total numbers of bees foraging in the *lambda*-Cyhalothrin treated tunnels compared to the water-treated control tunnel on the treatment day. This was again due mainly to a sharp drop on the insecticide-treated ends. This preference for the water-treated end was significant but not dose-related. On Day 1 both *lambda*-Cyhalothrin tunnels had significantly fewer total foragers than the control, this effect being more marked at the higher rate but this difference was not significant. Again, there was a preference for the water-treated ends. These effects continued to a lesser degree until Day 3 and had probably gone by Day 4, but had definitely done so by Day 6. The foraging observations in Trial 3 were less frequent than in Trials 1 and 2 and there was no untreated control for comparison. Foraging almost completely ceased on the afternoon of treatment day but by Day 3 foraging activity reached a level similar to that seen pre-treatment.

Activity at the hive entrance: Within an hour of treatment with dimethoate worker bees showed hyperactivity, uncoordinated flight, walking and clustering at the hive entrance and many were dying. In the *lambda*-Cyhalothrin treated tunnels there was much less abnormal behaviour. A small number of workers and drones showed uncoordinated movements, or had difficulty in walking, and some showed cleaning movements. Some workers were uncoordinated when landing or taking off. Clustering was much less than with the toxic standard, with only small groups of bees appearing around the hive entrance, some of them also exposing their Nasanov glands.

Brood assessments: In the first post-treatment assessment in Trial 1 no effects of the *lambda*-Cyhalothrin treatments could be detected. At the second post-treatment assessment, no uncapped brood could be found in the toxic standard colony, although the original queen was found and was apparently healthy. The colonies from the other treatments had a small amount of brood, and no differences due to the *lambda*-Cyhalothrin treatments could be detected. In Trial 2 the brood production in all colonies was severely disrupted. However, as both *lambda*-Cyhalothrin colonies had similar amounts of brood to the control, the effects seen on the *lambda*-Cyhalothrin treatment brood were clearly not treatment-related.

Hive weights: no treatment-related pattern in hive weight changes was found.

It is therefore concluded that *lambda*-Cyhalothrin is of low risk to honey bees when applied to wheat on which aphid honeydew may be present.

	Evaluation by Competent Authorities
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	Not relevant

Materials and Methods

[REDACTED]

Results and discussion

[REDACTED]

Conclusion

[REDACTED]

Reliability

Acceptability

Remarks

98/8 Doc IIIA section No.	7.5.4.1/03	Acute toxicity to honey bees and other beneficial arthropods, for example predators
91/414 Annex	II	Bees: Acute toxicity
Point addressed	8.3.1.1	

		Official use only
Reference point (location) in dossier	7.5.4.1/03	
Title:	PP321: Field test of toxicity to honey bees (<i>Apis mellifera</i>) on flowering oilseed rape (<i>Brassica napus</i>)	
Project/Report number:	RJ0413B	
Author(s):	Gough, H.J., Collins, I.G. and Wilkinson, W.	
Date of report:	1985	
Published:	Not published	
Testing facility:	Jealott's Hill Research Station, ICI Plant Protection Division, Bracknell, UK	
Test substance:	Lambda-Cyhalothrin (PP321) 5% EC formulation	
Study dates	24 April – 24 May 1984	
GLP:	Yes	
Deficiencies:	None.	
Reliability indicator	1.	

	Official use only
<p>Materials and methods: A very large scale field study was conducted to determine the hazard to bees of <i>lambda</i>-Cyhalothrin, when applied as an EC formulation at a rate of 10 g a.s./ha, to flowering oilseed rape. Azinophos-methyl was applied as a toxic standard. Six fields of winter rape (each at least 20 ha) were used to conduct the two consecutive replicate trials each comprising an untreated control, a toxic standard (azinophos methyl 420-428 g a.s./ha + demeton-s-methyl 125-127 g a.s./ha) and the <i>lambda</i>-Cyhalothrin treatment (10 g a.s./ha). The rape crop had open flowers throughout the period of the trials. Application was by helicopter, at midday, when bees were actively foraging and therefore exposed to direct overspray. The study therefore constitutes a very worst-case scenario. In each group of five hives at each field, the outer two hives were fitted with a pollen trap. The inner three hives were fitted with dead bee trays for mortality assessment and were also examined for effects on the brood.</p> <p>Findings: The results of the study are summarised below:</p> <p>Mortality: The results clearly show the high mortality in the toxic standard colonies after treatment. Azinophos-methyl killed around 250 and >1000 bees in the four days following treatment in Trials 1 & 2 respectively. By contrast, the mortality levels in the <i>lambda</i>-Cyhalothrin treatments did not increase above the levels found on the control fields in either trial.</p>	

Foraging: In both trials there were strong indications that the numbers of bees foraging on the fields treated with *lambda*-Cyhalothrin decreased or failed to increase according to the expected pattern in the period immediately after application. No effects were seen on subsequent days. In both trials very few bees were seen foraging on the toxic standard fields for the duration of the post-treatment assessments (three to four days after spraying).

Activity at the hive entrance: The reaction of the bees to the *lambda*-Cyhalothrin sprays was the same in both trials. About 20 minutes after spraying had finished there was an increase in the numbers returning to the hives. At the same time there was a marked decrease (about 75%) in numbers leaving the hives and this was maintained for an hour and a half before numbers returned to normal levels for the rest of the afternoon. Some bees returning to the hives showed various abnormal behaviours including agitation, staggering, cleaning and clustering. There was also some aggression towards the observer. These effects started at about the time the hives were oversprayed and lasted for up to 3 hours, but were most marked over the first half hour. On the toxic standard field in Trial 1 bee activity ceased at about the same time as the spraying was completed. There was a small amount of flying activity after one hour and although it subsequently increased it did not regain pre-treatment levels. In Trial 2 activity declined throughout spraying and there was much cleaning activity at the hive entrance. The number of bees leaving after spraying had finished was normal, but the flight was erratic and few bees returned to the treated crop. Many bees were seen crawling near the hive entrance shortly after spraying began and within 10 minutes of it finishing there were 1-200 dead or moribund bees. The activity of the colonies at the toxic standard fields appeared to be reduced over the post-treatment assessment period.

Brood assessments: Due to the inherent variability between individual colonies, the brood assessment data are very variable and comparisons are made more difficult by the lack of assessments on some of the untreated control colonies. However, it is clear that there were no effects on any of the colonies on the *lambda*-Cyhalothrin treatments, with all showing some increase between the assessments equal to or greater than the controls. One colony on the toxic standard site in Trial 2 did show a marked decline in brood not related to any obvious normal cause (such as queen failure), indicating that it was affected by the treatment.

Pollen: The amount of pollen collected by the colonies was very variable over the course of the two trials reflecting the variability in the weather and hence foraging activity. In all colonies, the proportion of oilseed rape pollen was very high at the start but tended to decline over the course of the two trials. Pollen collection on the *lambda*-Cyhalothrin sites remained high throughout both trials compared with the controls and the samples contained the highest proportion of rape pollen after treatment indicating that there was no sustained reduction in foraging on the oilseed rape at these sites. The highest concentration of *lambda*-Cyhalothrin residues detected in any of the pollen samples was 0.44 µg/g on Day 2 in Trial 2. By day 10 in both trials the levels had decreased to close to or below the limit of detection.

Honey and wax: The yield from the hives at the *lambda*-Cyhalothrin sites was unaffected by the treatment. However, the results do suggest that the yield from the toxic standard colonies was reduced. The results of the analysis for *lambda*-Cyhalothrin residues in the honey and wax taken from the hives after treatment show that the levels were negligible in all cases, indicating that very little *lambda*-Cyhalothrin was entering the hive. Residue levels were below the limit of detection by 12 days after treatment. Results from the toxic standard sites, sprayed with azinphos-methyl, confirm that the bees were at risk at the time of the trial. There was a marked increase in mortality for up to four days after treatment and foraging virtually ceased for at least this period. There were also indications of effects on the health of the colonies in terms of their brood development and honey yield. Under the conditions of this study, in which the bees were exposed to maximum risk, it is concluded that the use of *lambda*-Cyhalothrin on flowering oilseed rape at rates up to 10 g ai/ha is of low risk to honey

bees. It is also likely to be safe on other flowering crops at similar rates.

Evaluation by Competent Authorities	
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	Not relevant
Materials and Methods	[REDACTED]
Results and discussion	[REDACTED]
Conclusion	[REDACTED]
Reliability	
Acceptability	
Remarks	

98/8 Doc IIIA section No.	7.5.4.1/04	Acute toxicity to honey bees and other beneficial arthropods, for example predators
91/414 Annex	II	Bees: Acute toxicity
Point addressed	8.3.1.1	

		Official use only
Reference point (location) in dossier	7.5.4.1/04	
Title:	Assessment of side effects of Karate WG on the honey bee (<i>Apis mellifera</i> L.) in the field following application during bee-flight in Spain	
Project/Report number:	No. 98139/S1-BFEU/C	
Author(s):	Nengel, S.	
Date of report:	1999	
Published:	Not published	
Testing facility:	GAB Biotechnologie GmbH, Niefern-Öschelbronn, Germany	
Test substance:	lambda-Cyhalothrin WG formulation, purity 5.32% w/w	
Study dates	14 April – 6 September 1996	
GLP:	Yes	
Deficiencies:	None.	
Reliability indicator	1.	

		Official use only
Materials and methods:		
Two tests were conducted with a 50 g/kg WG formulation of lambda-Cyhalothrin (YF8048A) in a single study at different test sites in Spain and starting on different dates. In the first test, lambda-Cyhalothrin was applied to oilseed rape (<i>Brassica napus</i>) at 20 and 25 g a.s./ha in a volume of 200 L/ha. An untreated oilseed rape field served as control. In the second test, only the lower rate of 20 g a.s./ha was applied to oilseed rape in a volume of 200 L/ha. An untreated field of <i>Phacelia tanacetifolia</i> served as control. During the test, the <i>Phacelia</i> and oilseed rape were in the same flowering stage and, therefore, the general flight activity and mortality of the bees was comparable in the different treatments. A toxic standard, dimethoate 400 g/L EC, was applied at a rate of 1.8 L/ha in both tests. Lambda-Cyhalothrin and dimethoate were applied in separate fields during periods of bee flight activity. Treatment fields were separated by at least 3 km and were not close to other flowering crops attractive to bees. Four normally developed, queen-right bee colonies were used per treatment and were placed near each test field. Spraying was done whilst the crop was in full bloom and bees were actively foraging. The effect of the application on the bee colonies was examined by comparing the bees exposed to the test substance treatment to the bees exposed to the control and toxic standard. A comparison was made of the pre- and post-application results of the following observations:		
mortality in front of the hives and in the field;		

flight intensity in the field;
behaviour of bees at the entrance to the hives;
development of the bee brood.

Observations of mortality and activity were performed daily for 3 days in advance of, and 7 days after, the application. Brood development was checked once before application and twice after.

Findings:

In the first test, the *lambda*-Cyhalothrin 20 g a.s./ha treatment did not cause mortality significantly different from the control. In the *lambda*-Cyhalothrin 25 g a.s./ha treatment, maximum mortality was reached on the day of treatment and then dropped to within the pre-application range from Day 2 after spraying. The application of dimethoate as a toxic standard caused a clear increase in mortality. The ratio of average post-application mortality to average pre-application mortality (QM(average)) was 1.1 in the *lambda*-Cyhalothrin 20 g a.s./ha treatment, 1.4 in the 25 g a.s./ha treatment and the control, and 3.2 in the toxic standard treatment. In the second test, the application of *lambda*-Cyhalothrin at 20 g a.s./ha did not result in any increase in mortality. In the toxic standard treatment a slight increase in mortality was observed. The values for QM(average) were 0.2 in the *lambda*-Cyhalothrin treatment, 0.7 in the control and 1.5 in the toxic standard.

Differences in mortality levels between the two tests may be attributed to differences in bee activity at time of spraying and plot size. In the first test, in all chemical treatments, the average flight intensity dropped after application and remained at a lower level on spray day. In the second test, the flight intensity was low prior to and after application in all three treatments. This was thought to be due to high temperatures. In the first test, bees showing symptoms of poisoning were found lying in front of the hives in the two *lambda*-Cyhalothrin treatments and the toxic standard shortly after treatment. On evaluation days before treatment, and on days 1-7 after treatment, no abnormal behaviour of bees in front of the hives or in the field was observed. In the second test, no affected bees were found in front of the hives. In the *lambda*-Cyhalothrin treatments, no abnormal decrease or changes in brood development was observed after application and no abnormal differences were noticed between the test substance treatments and the control in both tests.

It was therefore concluded that *lambda*-Cyhalothrin applied at rates of up to 25 g ai/ha had no long-term side-effects on honey bees in the field. Bees were affected for a maximum of two days after application.

Evaluation by Competent Authorities	
EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	Not relevant
Materials and Methods	[REDACTED]
Results and discussion	[REDACTED]
Conclusion	[REDACTED]
Reliability	[REDACTED]
Acceptability	[REDACTED]
Remarks	[REDACTED]

98/8 Doc IIIA section No.	7.5.4.1/05	Acute toxicity to honey bees and other beneficial arthropods, for example predators
91/414 Annex	II	Bees: Acute toxicity
Point addressed	8.3.1.1	

		Official use only
Reference point (location) in dossier	7.5.4.1/05	
Title:	Assessment of the side-effects of ICI 90420 I O WG on the honey bee (<i>Apis mellifera</i>) in the semi-field	
Project/Report number:	93041/01-AmZ	
Author(s):	Tornier, I.	
Date of report:	1993	
Published:	Not published	
Testing facility:	GAB Biotechnologie GmbH, Niefern-Öschelbronn, Germany	
Test substance:	<i>lambda</i> -Cyhalothrin WG formulation, content 5.0% w/w	
Study dates	22 June to 06 July 1993	
GLP:	Yes	
Deficiencies:	None.	
Reliability indicator	1.	

	Official use only
<p>Materials and methods: 50 g/kg WG formulation (ICI 90420 I O WG (=YF8048)), <i>lambda</i>-Cyhalothrin content of 5.0% w/w.</p> <p>The side-effects of <i>lambda</i>-Cyhalothrin, formulated as <i>lambda</i>-Cyhalothrin 50 g/kg WG (ICI 90420 I O WG), were tested on the honey bee (<i>Apis mellifera</i> L.) in the semi-field according to the guideline for the testing of crop protection products of the BBA, part VI. <i>Lambda</i>-Cyhalothrin was applied at a rate of 15 g a.s./ha in a volume of 200 L/ha. A water control and toxic reference treatment (Hostathion at 0.6 L/ha in a volume of 300 L/ha) were included. In two replicate tests, the effect of <i>lambda</i>-Cyhalothrin was tested on small bee hives in screening cages (4.8 × 3.6 m area, 2 m high) with flowering <i>Phacelia tanacetifolia</i>. The test substance was applied during honey bee foraging activity. The effect of the application on the bee colonies was examined by comparing the bees of the test substance treatment to the bees of the control and toxic reference and by comparing the pre- and post-application results of the following observations:</p> <ul style="list-style-type: none"> • mortality before and after application of the test substance; • flight intensity; • behaviour of bees prior to, during and after application; • development of the bee brood. 	

After application of the test substance, flight intensity and behaviour of the bees were continuously observed and recorded during the first hour, then at 2-hourly intervals. On days 1-4 after application, three evaluations were carried out on each day. Colony strength and brood development were also checked before and after application.

Findings:

In the first test a repellent effect was observed on the day of application. On the days following application, the flight intensity in the *lambda*-Cyhalothrin treatment remained generally lower than the control but higher than in the reference substance cage. During the whole evaluation period mortality in the *lambda*-Cyhalothrin treatment cage was higher than the control and lower than the toxic reference treatment. A repellent effect was also observed in the second test. Mortality was slightly increased only at the time of application. On the following days no effect on foraging or mortality due to *lambda*-Cyhalothrin treatment was observed. In conclusion, *lambda*-Cyhalothrin applied at 15 g a.s./ha in cages caused repellency and mortality effects. In one replicate test, effects lasted for the four observation days post-application. In a second replicate test, effects lasted for only one day.

Evaluation by Competent Authorities

EVALUATION BY RAPPORTEUR MEMBER STATE

Date	Not relevant
Materials and Methods	[REDACTED]
Results and discussion	[REDACTED]
Conclusion	[REDACTED]
Reliability	
Acceptability	
Remarks	

98/8 Doc IIIA section No.	7.5.4.1/06	Acute toxicity to honey bees and other beneficial arthropods, for example predators
91/414 Annex	II	Bees: Acute toxicity
Point addressed	8.3.1.1	

		Official use only
Reference point (location) in dossier	7.5.4.1/06	
Title:	<i>Lambda</i> -Cyhalothrin: comparison of the effects of an EC and a WG formulation on honey bees (<i>Apis mellifera</i>) foraging on simulated aphid honeydew on winter wheat	
Project/Report number:	RJ1406B	
Author(s):	Gough, H.J., Yearsdon, H.A., Jackson, D. and Lewis, G.B.	
Date of report:	1993	
Published:	Not published	
Testing facility:	Jealott's Hill Research Station, ICI Plant Protection Division, Bracknell, UK	
Test substance:	<i>lambda</i> -Cyhalothrin WG formulation, 6.0% w/w <i>lambda</i> -Cyhalothrin EC formulation, 5.7% w/w	
Study dates	01 June to 28 July 1992	
GLP:	Yes	
Deficiencies:	None.	
Reliability indicator	1.	

		Official use only
<p>Materials and methods: 50 g/kg WG formulation (YF8048 <i>lambda</i>-Cyhalothrin content of 6.0% w/w. 50 g/L EC formulation of <i>lambda</i>-Cyhalothrin (YF7897 (= JF9509)), <i>lambda</i>-Cyhalothrin content of 5.7%.</p> <p>Colonies of honey bees were confined in mesh-covered tunnels erected over plots of winter wheat sprayed with sucrose solution to simulate aphid honeydew. Treatments were: water sprayed control, <i>lambda</i>-Cyhalothrin WG at 6.25 g a.s./ha, <i>lambda</i>-Cyhalothrin WG at 12.5 g a.s./ha, <i>lambda</i>-Cyhalothrin EC at 6.25 g a.s./ha, phosalone at 600 g a.s./ha as a positive control for repellence effects. Each treatment was applied in one tunnel, with one hive of bees. Within each tunnel were four sub-plots; in insecticide treatment tunnels, two of the sub-plots were treated with the insecticide and the other two with water only. Bees were observed before and after treatment for foraging activity on each sub-plot and other behavioural aspects, mortality and the state of the brood. Two tests were conducted.</p> <p>Findings: No significant treatment-related mortality was found in either of the tests. <i>Lambda</i>-Cyhalothrin had an inhibitory effect on foraging on treatment day and for up to three days after treatment. Depression of foraging was rate-related for the <i>lambda</i>-Cyhalothrin WG formulation, but was similar for the EC and WG formulations at the same rate. Phosalone</p>		

reduced foraging activity for at least five days. There was no evidence of insecticide treatment effects on the brood. The WG and EC formulations of <i>lambda</i> -Cyhalothrin have similar repellent effects on foraging bees and, at the rates tested (6.25 and 12.5 g a.s./ha), neither formulation is likely to cause significant mortality in the field.	
--	--

Evaluation by Competent Authorities	
EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	Not relevant
Materials and Methods	[REDACTED]
Results and discussion	[REDACTED]
Conclusion	[REDACTED]
Reliability	
Acceptability	
Remarks	

98/8 Doc IIIA section No.	7.5.4.1/07	Acute toxicity to honey bees and other beneficial arthropods, for example predators
91/414 Annex	II	Bees: Acute toxicity
Point addressed	8.3.1.1	

		Official use only
Reference point (location) in dossier	7.5.4.1/07	
Title:	Assessment of side effects of Karate CS on the honey bee (<i>Apis mellifera</i> L.) in the field following application during bee-flight	
Project/Report number:	97146/01-BFEU/C	
Author(s):	Nengel, S.	
Date of report:	1998	
Published:	Not published	
Testing facility:	GAB Biotechnologie GmbH, Niefern-Öschelbronn, Germany	
Test substance:	lambda-Cyhalothrin CS formulation, 9.6% w/w	
Study dates	09 July – 04 September 1997	
GLP:	Yes	
Deficiencies:	None.	
Reliability indicator	1.	

	Official use only
<p>Materials and methods: 100 g/L CS formulation (WF2639), lambda-cy g/L CS (WF2639), were tested on the honey bee (<i>Apis mellifera</i> L.) in the field according to the guideline for the testing of crop protection products of the BBA, part VI, and EPPO guideline no. 170. Lambda-Cyhalothrin was applied to flowering <i>Phacelia tanacetifolia</i> at 15 g a.s./ha in a volume of 200 L/ha. Untreated <i>P. tanacetifolia</i> fields served as control. The treated field was separated from the control by at least 3 km. Four normally developed bee colonies were used per treatment, placed near each test field. Spraying was done when the crop was in full bloom and bees were actively foraging. The effect of the application on the bee colonies was examined by comparing the bees exposed to the test substance treatment to the bees exposed to the control and by comparing the pre- and post-application results of the following observations:</p> <ul style="list-style-type: none"> • mortality in front of the hives and in the field; • flight intensity in the field; • behaviour of bees at the entrance to the hives; • development of the bee brood. <p>Observations of mortality and activity were performed daily for 3 days in advance of and 7 days after the application. Brood development was checked once before application and twice after. Two replicate tests were conducted, starting on different dates.</p>	

<p>Findings: In both tests, <i>lambda</i>-Cyhalothrin caused an increase in honey bee mortality, reaching a maximum on the day of application. In the first test, the ratio of average post-application mortality to average pre-application mortality ($Q_{M(average)}$) was 5.6 in the <i>lambda</i>-Cyhalothrin treatment and 1.3 in the control. This reflected high mortality in the <i>lambda</i>-Cyhalothrin treatment on the day of application and on the day after application. From Day 2 after treatment, mortality in the <i>lambda</i>-Cyhalothrin treatment returned to control levels or lower. In the second test, the ratio of average post-application mortality to average pre-application mortality ($Q_{M(average)}$) was 36.2 in the <i>lambda</i>-Cyhalothrin treatment and 2.2 in the control. Again, this reflected high mortality in the <i>lambda</i>-Cyhalothrin treatment on the day of application and on the day after application. From Day 2 after treatment, mortality in the <i>lambda</i>-Cyhalothrin treatment returned to control levels or lower. Flight intensity dropped after application of <i>lambda</i>-Cyhalothrin in both tests. After application day, flight activity increased to control levels. Bees exhibiting signs of poisoning were observed at the entrance to the hive in the <i>lambda</i>-Cyhalothrin treatment shortly after application. On evaluation days before treatment and on days 1-7 after treatment, no abnormal behaviour of the bees in front of the hives or in the field was observed. A large proportion of the pollen collected by the bees at the <i>lambda</i>-Cyhalothrin treated field was <i>Phacelia</i>, indicating that they were foraging on the treated crop. No effects on brood development due to <i>lambda</i>-Cyhalothrin treatment were observed.</p> <p><i>Lambda</i>-Cyhalothrin applied to flowering crop at a rate of 15 g a.s./ha had no long-term side-effects on honey bees in the field. Bees were affected for a maximum of two days after application.</p>	
--	--

Evaluation by Competent Authorities	
EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	Not relevant
Materials and Methods	<div style="background-color: black; height: 15px; width: 100%;"></div> <div style="background-color: black; height: 15px; width: 100%;"></div> <div style="background-color: black; height: 15px; width: 100%;"></div> <div style="background-color: black; height: 15px; width: 100%;"></div> <div style="background-color: black; height: 15px; width: 100%;"></div>
Results and discussion	
Conclusion	<div style="background-color: black; height: 15px; width: 100%;"></div>
Reliability	
Acceptability	
Remarks	

98/8 Doc IIIA section No.	7.5.4.1/08	Acute toxicity to honey bees and other beneficial arthropods, for example predators
91/414 Annex	II	Bees: Acute toxicity
Point addressed	8.3.1.1	

		Official use only
Reference point (location) in dossier	7.5.4.1/08	
Title:	Assessment of side effects of Karate 10CS on the honey bee (<i>Apis mellifera</i> L.) in the field following application during bee-flight	
Project/Report number:	98189/01-BFCe/C	
Author(s):	Nengel, S.	
Date of report:	1999	
Published:	Not published	
Testing facility:	GAB Biotechnologie GmbH, Niefern-Öschelbronn, Germany	
Test substance:	lambda-Cyhalothrin CS formulation, 9.6% w/w	
Study dates	10 July – 26 August 1998	
GLP:	Yes	
Deficiencies:	None.	
Reliability indicator	1.	

		Official use only
<p>Materials and methods: 100 g/L CS formulation (WF2639), lambda-Cyhalothrin content of 9.6% w/w.</p> <p>The side-effects of lambda-Cyhalothrin, formulated as a 100 g/L CS (WF2639), were tested on the honey bee (<i>Apis mellifera</i> L.) in the field according to the guideline for the testing of crop protection products of the BBA, part VI, and EPPO guideline no. 170. Lambda-Cyhalothrin was applied to flowering <i>Phacelia tanacetifolia</i> at rates of 7.5 and 15 g a.s./ha in a volume of 200 L/ha. Untreated <i>P. tanacetifolia</i> fields served as control. The treated field was separated from the control by at least 3 km. Five normally developed bee colonies were used per treatment, placed near each test field. Spraying was done when the crop was in full bloom and bees were actively foraging. The effect of the application on the bee colonies was examined by comparing the bees of the test substance treatment to the bees of the control and by comparing the pre- and post-application results of the following observations:</p> <ul style="list-style-type: none"> • mortality in front of the hives and in the field; • flight intensity in the field; • behaviour of bees at the entrance to the hives; • development of the bee brood. <p>Observations of mortality and activity were performed daily for 3 days in advance of and 7 days after the application. Brood development was checked once before application and</p>		

twice after. Two replicate tests were conducted, starting on different dates.

Findings:

Lambda-Cyhalothrin at 7.5 g a.s./ha caused negligible, if any, increases in mortality compared to controls in both tests. *Lambda-Cyhalothrin* at 15 g a.s./ha caused clear increases in mortality compared to controls. In the first test, the ratio of average post-application mortality to average pre-application mortality ($Q_{M(average)}$) was 0.4 in the *lambda-Cyhalothrin* 7.5 g a.s./ha and the control treatments, and 2.0 in the *lambda-Cyhalothrin* 15 g a.s./ha treatment. The value for the 15 g a.s./ha treatment reflected high mortality on the day of application and for two days after application. From Day 3 after treatment, mortality in the *lambda-Cyhalothrin* treatment returned to pre-application levels. In the second test, the ratio of average post-application mortality to average pre-application mortality ($Q_{M(average)}$) was 1.1 in the *lambda-Cyhalothrin* 7.5 g a.s./ha treatment, 2.4 in the 15 g a.s./ha treatment and 0.9 in the control. The value for the 15 g a.s./ha treatment reflected high mortality on the day of application and on the day after application. From Day 2 after treatment, mortality in the *lambda-Cyhalothrin* treatment returned to pre-application levels, except on Day 6 when there was a sudden peak in mortality. This was not thought likely to be treatment-related. At both *lambda-Cyhalothrin* application rates and in both tests an obvious repellence effect was evident directly after application and the foraging bees were observed returning to the hives. Activity remained lower than controls on the day of application and average flight intensity was slightly lower in the test substance treatments than the controls for the whole study period. However, differences in average values were not large and on some occasions activity was higher in the *lambda-Cyhalothrin* treatments than the controls. In the *lambda-Cyhalothrin* 7.5 g a.s./ha treatment, only a few bees exhibiting signs of poisoning were observed at the entrance to the hive in both tests. In the *lambda-Cyhalothrin* 15 g a.s./ha treatment, up to approximately 100 bees exhibiting signs of poisoning were observed at the entrance to the hives on the day of application in the first test, and up to approximately 38 bees in the second test. On evaluation days before treatment and on days 1-7 after treatment, no abnormal behaviour of the bees in front of the hives or in the field was observed. A large proportion of the pollen collected by the bees was *Phacelia*, indicating that they were foraging on the study crops. *Lambda-Cyhalothrin* CS capsules were not found in the pollen from pollen traps or comb stores. No effects on brood development due to *lambda-Cyhalothrin* treatment were observed.

Lambda-Cyhalothrin CS applied to flowering crop at a rate of 7.5 g a.s./ha had negligible side-effects on honey bees in the field other than a beneficial repellent effect. *Lambda-Cyhalothrin* CS applied to flowering crop at a rate of 15 g a.s./ha resulted in short-term increased mortality as well

Evaluation by Competent Authorities	
EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	Not relevant
Materials and Methods	[REDACTED]
Results and discussion	[REDACTED]
Conclusion	[REDACTED]
Reliability	
Acceptability	
Remarks	

98/8 Doc IIIA section No.	7.5.4.1/09	Acute toxicity to honey bees and other beneficial arthropods, for example predators
91/414 Annex	II	Bees: Acute toxicity
Point addressed	8.3.1.1	

		Official use only
Reference point (location) in dossier	7.5.4.1/09	
Title:	Assessment of side effects of Karate 10CS on the honey bee (<i>Apis mellifera</i> L.) in the field following application during bee-flight	
Project/Report number:	98189/01-BFEU/C	
Author(s):	Nengel, S.	
Date of report:	1999	
Published:	Not published	
Testing facility:	GAB Biotechnologie GmbH, Niefern-Öschelbronn, Germany	
Test substance:	lambda-Cyhalothrin CS formulation, 9.6% w/w	
Study dates	20 July – 07 September 1998	
GLP:	Yes	
Deficiencies:	None.	
Reliability indicator	1.	

	Official use only
<p>Materials and methods: 100 g/L CS formulation (WF2639), lambda-Cyhalothrin content of 9.6% w/w.</p> <p>The side-effects of lambda-Cyhalothrin, formulated as a 100 g/L CS (WF2639), were tested on the honey bee (<i>Apis mellifera</i> L.) in the field according to the guideline for the testing of crop protection products of the BBA, part VI, and EPPO guideline no. 170. Lambda-Cyhalothrin was applied to flowering <i>Phacelia tanacetifolia</i> at rates of 7.5 and 15 g ai/ha in a volume of 300 L/ha. Untreated <i>P. tanacetifolia</i> fields served as control. The treated field was separated from the control by at least 3 km. Five normally developed, queen-right bee colonies were used per treatment, placed near each test field. Spraying was done when the crop was in full bloom and bees were actively foraging. The effect of the application on the bee colonies was examined by comparing the bees of the test substance treatment to the bees of the control and by comparing the pre- and post-application results of the following observations:</p> <ul style="list-style-type: none"> • mortality in front of the hives and in the field; • flight intensity in the field; • behaviour of bees at the entrance to the hives; • development of the bee brood. 	

Observations of mortality and activity were performed daily for 3 days in advance of and 7 days after the application. Brood development was checked once before application and twice after. Two replicate tests were conducted, starting on different dates.

Findings:

In both tests, the mortality was slightly increased after application of *lambda*-Cyhalothrin at 7.5 g a.s./ha and there were clear increases in mortality after application at 15 g a.s./ha. At both rates the post-application mortality reached a maximum on the day of application. In the first test, the ratio of average post-application mortality to average pre-application mortality ($Q_{M(average)}$) was 1.4 in the *lambda*-Cyhalothrin 7.5 g a.s./ha, 7.8 in the *lambda*-Cyhalothrin 15 g a.s./ha treatment and 0.7 in the control. The values for the *lambda*-Cyhalothrin treatments reflected high mortality on the day of application. From Day 1 after application, mortality in the *lambda*-Cyhalothrin treatments returned to pre-application levels. In the second test, the ratio of average post-application mortality to average pre-application mortality ($Q_{M(average)}$) was 0.8 in the *lambda*-Cyhalothrin 7.5 g a.s./ha treatment, 14.7 in the 15 g a.s./ha treatment and 0.6 in the control. The value for the *lambda*-Cyhalothrin 15 g a.s./ha treatment reflected high mortality on the day of application and, to a small extent, on Day 1 after application. From Day 2 after application, mortality in the *lambda*-Cyhalothrin treatments returned to pre-application levels. At both *lambda*-Cyhalothrin application rates and in both tests an obvious repellence effect was evident directly after application and the foraging bees were observed returning to the hives. In both tests, there was a reduction in foraging activity in both the *lambda*-Cyhalothrin treatments on the day of application but average values for foraging activity over the whole post-application period were higher in the *lambda*-Cyhalothrin treatments than the controls. In the *lambda*-Cyhalothrin 7.5 g a.s./ha treatment, only a few bees exhibiting signs of poisoning were observed at the entrance to the hive in both tests. In the *lambda*-Cyhalothrin 15 g a.s./ha treatment, up to approximately 165 bees exhibiting signs of poisoning were observed at the entrance to the hives on the day of application in the first test, and up to approximately 89 bees in the second test. On evaluation days before treatment and on days 1-7 after treatment, no abnormal behaviour of the bees in front of the hives or in the field was observed. A proportion of the pollen collected by the bees was *Phacelia*, indicating that they were foraging on the study crops. *Lambda*-Cyhalothrin CS capsules were not found in the pollen from pollen traps or comb stores. No effects on brood development due to *lambda*-Cyhalothrin treatment were observed.

Lambda-Cyhalothrin CS applied to flowering crop at a rate of 7.5 g a.s./ha had negligible side-effects on honey bees in the field other than a beneficial repellent effect. *Lambda*-Cyhalothrin CS applied to flowering crop at a rate of 15 g a.s./ha resulted in short-term increased mortality as well as repellence. Bees were affected for a maximum of two days after application.

Evaluation by Competent Authorities	
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	Not relevant
Materials and Methods	[REDACTED]
Results and discussion	[REDACTED]
Conclusion	[REDACTED]
Reliability	
Acceptability	
Remarks	

98/8 Doc IIIA section No.	7.5.4.1/10	Acute toxicity to honey bees and other beneficial arthropods, for example predators
91/414 Annex	II	Bees: Acute toxicity
Point addressed	8.3.1.1	

		Official use only
Reference point (location) in dossier	7.5.4.1/10	
Title:	<i>Lambda</i> -Cyhalothrin: effects on honey bees (<i>Apis mellifera</i> L.) foraging on flowering oilseed rape (<i>Brassica napus</i>) in a large-scale field study	
Project/Report number:	RJ1547B	
Author(s):	Gough, H.J., Yearsdon, H.A., Jackson, D. and Lewis, G.B.	
Date of report:	1994	
Published:	Not published	
Testing facility:	Jealott's Hill Research Station, ICI Plant Protection Division, Bracknell, UK	
Test substance:	<i>lambda</i> -Cyhalothrin EC formulation, 50 g/L	
Study dates	17 April – 06 August 1993	
GLP:	Yes	
Deficiencies:	None.	
Reliability indicator	1.	

		Official use only
Materials and methods:	50 g/L EC formulation (YF7897 (= JF9509)), <i>lambda</i> -Cyhalothrin content of 49.7 g a.s./L. This study was designed to monitor the effects on honey bees of the application of <i>lambda</i> -Cyhalothrin to a large area of flowering oilseed rape which would form a large proportion of the local foraging area for the bees. Twenty-two hives containing colonies of honeybees were placed at the edges of fields of flowering winter oilseed rape (total 132 ha). <i>Lambda</i> -Cyhalothrin 50 g/L EC was applied to the crop at a rate of 7.5 g a.s./ha in a volume of 300 L/ha at a time when the bees were foraging on the crop. Additional hives were placed next to oilseed rape not treated with <i>lambda</i> -Cyhalothrin and several kilometres away from the treated crops. Mortality of adult bees and of brood was measured at the hive by collecting discarded dead individuals. Immediate effects on bee activity and a measure of potential exposure were assessed by monitoring their foraging activity on the treated crop. Other aspects of flight activity, plus other behavioural responses, were assessed by studying the activity of the bees at the hive entrances. Pollen samples were collected by trapping them from bees to give another measure of the level of foraging activity and also an indication of where they had been foraging. The state of the colony inside the brood box and changes in weight of the hives were assessed in order to give a measure of longer term effects.	
Findings:		

<p>There was no effect on honey bee mortality from the <i>lambda</i>-Cyhalothrin treatment; the numbers of dead bees collected each day from all hives were within normal background levels throughout the trial. Foraging data suggested short-term reductions in foraging over treated crops. The data was inconclusive but indicated possible reductions in foraging for a maximum of two days. However, any reductions in foraging were within the normal range of fluctuations observed over the trial period. On average, the hives on the treated crop area gained weight by at least the average increase in weight of hives adjacent to untreated oilseed rape. The average increase in brood population in the colonies adjacent to the <i>lambda</i>-Cyhalothrin treated rape was at least as great as in those adjacent to the untreated crop. Pollen identification showed oilseed rape to consistently be one of the most abundant pollen types collected over the sampling period.</p> <p>Inconclusive effects on foraging activity were seen for a maximum of two days following <i>lambda</i>-Cyhalothrin treatment. No other treatment effects were seen. <i>Lambda</i>-Cyhalothrin applied to flowering oilseed rape will not cause any long-term effects on foraging honey bees.</p>	
--	--

Evaluation by Competent Authorities	
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	Not relevant
Materials and Methods	<div style="background-color: black; height: 15px; width: 100%;"></div> <div style="background-color: black; height: 15px; width: 95%;"></div> <div style="background-color: black; height: 15px; width: 90%;"></div> <div style="background-color: black; height: 15px; width: 85%;"></div> <div style="background-color: black; height: 15px; width: 75%;"></div>
Results and discussion	
Conclusion	<div style="background-color: black; height: 15px; width: 20%;"></div>
Reliability	
Acceptability	
Remarks	

98/8 Doc IIIA section No.	7.5.4.1/11	Acute toxicity to honey bees and other beneficial arthropods, for example predators
91/414 Annex	II	Bees: Acute toxicity
Point addressed	8.3.1.1	

		Official use only
Reference point (location) in dossier	7.5.4.1/11	
Title:	Acute contact and oral toxicity to honey bees (<i>Apis mellifera</i>) of an EW formulation (JF 10681)	
Project/Report number:	RJ0619B	
Author(s):	Collins, I.G. and Brown, R.A.	
Date of report:	1988	
Published:	Not published	
Testing facility:	Jealott's Hill Research Station, ICI Plant Protection Division, Bracknell, UK	
Test substance:	lambda-Cyhalothrin EW formulation, 50 g/L	
Study dates	22 – 26 September 1987	
GLP:	Yes	
Deficiencies:	None.	
Reliability indicator	1.	

	Official use only
<p>Materials and methods: 50 g/L EW formulation (JF10681), lambda-Cyhalothrin content of 50.4 g/L.</p> <p>Contact and oral tests were conducted using a range of doses of lambda-Cyhalothrin 50 g/L EW to obtain an LD₅₀ for each exposure route over 48 hours. In contact tests, the test formulation was diluted in deionised water with surfactant at 500 mg/L. A 1 µL droplet of test solution was applied to the thorax of each bee. In oral tests, the bees were fed a range of concentrations of the test formulation made up in 50% sucrose solution. Six dose rates and a diluent control were used in each test, with three replicate cages of 10 bees at each dose rate. Two contact and two oral tests were conducted with lambda-Cyhalothrin 50 g/L EW. One contact and one oral test were conducted with technical dimethoate (purity 96.4% w/w), as a toxic standard, with three dose rates.</p> <p>Findings: The 48 hour contact LD₅₀ values (with 95% confidence intervals) for lambda-Cyhalothrin 50 g/L EW in the first and second tests were 0.0939 (0.0662 - 0.119) and 0.1206 (0.0984 - 0.143) µg a.s./bee, respectively. The weighted mean contact LD₅₀ was 0.109 µg a.s./bee. The contact NOEL was observed to be 0.05 and 0.01 µg ai/bee in the first and second tests, respectively. The 48 hour oral LD₅₀ values (with 95% confidence intervals) for lambda-Cyhalothrin 50 g/L EW in the first and second tests were 0.268 (0.176 - 0.357) and 0.179 (0.098 - 0.235) µg a.s./bee, respectively. The weighted mean oral LD₅₀ was 0.220 µg a.s./bee. The oral NOEL in both tests was 0.10 µg a.s./bee. There was no evidence of delayed effects.</p>	

<p>The 48 hour contact and oral LD₅₀ values (with 95% confidence intervals) for technical dimethoate were 0.15 (0.99 - 0.174) and 0.16 (not calculable) µg a.s./bee, respectively. The 48 hour contact LD₅₀ for lambda-Cyhalothrin 50 g/L EW to honey bees was calculated to be 0.109 µg a.s./bee. The 48 hour oral LD₅₀ for lambda-Cyhalothrin 50 g/L EW to honey bees was calculated to be 0.220 µg a.s./bee.</p>	
--	--

Evaluation by Competent Authorities	
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	Not relevant
Materials and Methods	[REDACTED]
	[REDACTED]
	[REDACTED]
	[REDACTED]
	[REDACTED]
Results and discussion	[REDACTED]
Conclusion	[REDACTED]
Reliability	
Acceptability	
Remarks	

98/8 Doc IIIA section No.	7.5.4.1/12	Acute toxicity to honey bees and other beneficial arthropods, for example predators
91/414 Annex	II	Bees: Acute toxicity
Point addressed	8.3.1.1	

		Official use only
Reference point (location) in dossier	7.5.4.1/12	
Title:	<i>Lambda</i> -Cyhalothrin: acute contact and oral toxicity to honey bees (<i>Apis mellifera</i>) of a 100 g/L CS formulation	
Project/Report number:	EL8800	
Author(s):	Thompson, H.M.	
Date of report:	1997	
Published:	Not published	
Testing facility:	Central Science Laboratory, National Bee Unit, Sand Hutton, York, UK	
Test substance:	<i>lambda</i> -Cyhalothrin CS formulation, 10.0% w/w	X1
Study dates	18 August – 05 September 1997	
GLP:	yes	X2
Deficiencies:	None	
Reliability indicator	1	

	Official use only
<p>Materials and methods: 100 g/L CS formulation (WF2639), <i>lambda</i>-Cyhalothrin content of 10.0% w/w.</p> <p>Contact and oral tests were conducted using a range of doses of <i>lambda</i>-Cyhalothrin 100 g/L CS to obtain an LD₅₀ for each exposure route over 48 hours. In contact tests, the test formulation was diluted in deionised water with surfactant at 500 mg/L. A 1 µL droplet of test solution was applied to the thorax of each bee. In oral tests, the bees were fed a range of concentrations of the test formulation made up in 50% w/v aqueous sucrose solution. Six dose rates and a diluent control were used in the contact test, with three replicate cages of 10 bees at each dose rate. Eight dose rates and a diluent control were used in the oral test, with three replicate cages of 10 bees at each dose rate. Two contact and two oral tests were conducted with <i>lambda</i>-Cyhalothrin 50 g/L EW. Tests were also conducted with formulated dimethoate, as a toxic standard, at three dose rates.</p> <p>Findings: The 48 hour contact LD₅₀ value (with 95% confidence intervals) for <i>lambda</i>-Cyhalothrin 100 g/L CS was 0.055 (0.040 - 0.074) µg a.s./bee. The contact NOEL was observed to be 0.010 µg a.s./bee. The 48 hour oral LD₅₀ value (with 95% confidence intervals) for <i>lambda</i>-Cyhalothrin 100 g/L CS was calculated to be 0.17 (0.11 - 0.30) µg a.s./bee. The oral NOEL in was observed to be 0.010 µg a.s./bee. There was no evidence of delayed effects.</p> <p>The 48 hour contact and oral LD₅₀ values (with 95% confidence intervals) for formulated dimethoate were 0.13 (0.11 - 0.16) and 0.11 (not estimable) ug a.s./bee, respectively.</p>	

Evaluation by Competent Authorities	
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	Not relevant
Materials and Methods	[REDACTED]
	[REDACTED]
	[REDACTED]
	[REDACTED]
Results and discussion	[REDACTED]
	[REDACTED]
	[REDACTED]
Conclusion	[REDACTED]
	[REDACTED]
Reliability	[REDACTED]
Acceptability	[REDACTED]
Remarks	[REDACTED]

98/8 Doc IIIA section No.	7.5.4.1/13	Acute toxicity to honey bees and other beneficial arthropods, for example predators
91/414 Annex	II	Bees: Acute toxicity
Point addressed	8.3.1.1	

		Official use only
Reference point (location) in dossier	7.5.4.1/13	
Title:	Assessment of side effects of ICI 90420-I-O-WG on the honey bee, (<i>Apis mellifera</i> L.), with the laboratory test method	
Project/Report number:	92038/01-Am	
Author(s):	Tornier, I.	
Date of report:	1992	
Published:	Not published	
Testing facility:	GAB Biotechnologie GmbH, Niefern-Öschelbronn, Germany	
Test substance:	lambda-Cyhalothrin WG formulation, 5.03% w/w	
Study dates	13 to 30 July 1992	
GLP:	Yes	
Deficiencies:	None	
Reliability indicator	1	

		Official use only
<p>Materials and methods: 50 g/kg WG formulation (YF8048), lambda-Cyhalothrin content of 5.03% w/w.</p> <p>Tests were conducted in the laboratory according to the BBA guideline of Stute <i>et al.</i> (1991). On two different dates, the effects of the test substance on worker honey bees were tested in four test procedures: inhalation toxicity, contact residual toxicity, wetting and oral toxicity. Bees were observed for 72 hours following treatment. For inhalation toxicity testing, a 0.15% solution of the test substance was placed in a Petri dish under cages containing the bees. For the contact toxicity test, filter paper was soaked with a 0.15% solution of the test substance, air dried and placed into the test cages. For the wetting test, bees confined in cages were sprayed evenly with a 0.15% solution of the test substance then transferred to clean cages. For the oral toxicity test, bees were offered 250 mm³ of aqueous sugar solution with test substance at three concentrations: 0.5%, 0.25%, 0.05%.</p> <p>Findings: Inhalation toxicity testing caused mortality of 10% and 13.3% after 72 hours for the first and second test dates, respectively. Contact and wetting tests caused 100% mortality on both test dates. The LD₅₀ for oral toxicity was found to lie between 12.5 and 59.8 µg/bee.</p>		

Evaluation by Competent Authorities
EVALUATION BY RAPPORTEUR MEMBER STATE

Date	Not relevant
Materials and Methods	[Redacted]
Results and discussion	[Redacted]
Conclusion	[Redacted]
Reliability	
Acceptability	
Remarks	

98/8 Doc IIIA section No.	7.5.4.1/14	Acute toxicity to honey bees and other beneficial arthropods, for example predators
91/414 Annex	II	Bees: Acute toxicity
Point addressed	8.3.1.1	

		Official use only
Reference point (location) in dossier	7.5.4.1/14	
Title:	Assessment of side effects of ICI 90420-I-O-WG on the honey bee (<i>Apis mellifera</i> L.) in the field by application after the daily bee-flight	
Project/Report number:	92038/01-AmF	
Author(s):	Tornier, I.	
Date of report:	1993	
Published:	Not published	
Testing facility:	GAB Biotechnologie GmbH, Niefern-Öschelbronn, Germany	
Test substance:	lambda-Cyhalothrin WG formulation, 5.03% w/w	
Study dates	26 June – 09 July 1992	
GLP:	Not applicable	
Deficiencies:	None	
Reliability indicator	1	

		Official use only
<p>Materials and methods: 50 g/kg WG formulation (ICI 90420-I-O-WG (=YF8048)), lambda-Cyhalothrin content of 5.03% w/w.</p> <p>The side-effects of lambda-Cyhalothrin, formulated as a 50 g/kg WG (ICI 90420-I-O-WG), were tested on the honey bee (<i>Apis mellifera</i> L.) in the field according to the guideline for the testing of crop protection products of the BBA, part VI. Lambda-Cyhalothrin was applied to flowering <i>Phacelia tanacetifolia</i> at a rate of 15 g a.s./ha in a volume of 200 L/ha. Three normally developed bee colonies were used for the treatment, placed near the test field. Three hives were used as controls, separated from the treated field by about 3 km. Spraying was done in the evening, after bees had stopped actively foraging. The effect of the application on the bee colonies was examined by comparing the bees of the test substance treatment to the bees of the control and by comparing the pre- and post-application results of the following observations:</p> <ul style="list-style-type: none"> • mortality in front of the hives and in the field; • changes in numbers of bees per colony and brood; • behaviour of bees on flowers and at the entrance to the hives. <p>Observations of mortality and activity were performed at least daily for 3-4 days in advance of and 7-8 days after the application. Hive strength and brood development were checked once</p>		

before application and once after. Two replicate tests were conducted, starting on different dates.

Findings:

There was no noticeable effect of *lambda*-Cyhalothrin treatment on bee mortality or flight intensity in either test. There was no evidence of repellence caused by the *lambda*-Cyhalothrin treatment. In most cases there was no influence of the treatment on the brood area. There was a reduction of brood in one *lambda*-Cyhalothrin treatment hive in the first test but the other two hives in that test and all three hives in the second test showed an increase in brood. Observations at the hive entrance indicated that the test bees were foraging mostly on the treated fields in both tests. No abnormal behaviour was observed in the bees, other than increased aggression for two days following treatment in the first test.

Lambda-Cyhalothrin WG applied to flowering crop in the evening, after bee foraging had ceased, at a rate of 15 g a.s./ha had no discernible side-effects on honey bees in the field.

Evaluation by Competent Authorities	
EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	Not relevant
Materials and Methods	[REDACTED]
Results and discussion	[REDACTED]
Conclusion	[REDACTED]
Reliability	
Acceptability	
Remarks	

98/8 Doc IIIA section No.	7.5.4.1/15	Acute toxicity to honey bees and other beneficial arthropods, for example predators
91/414 Annex	II	Bees: Acute toxicity
Point addressed	8.3.1.1	

		Official use only
Reference point (location) in dossier	7.5.4.1/15	
Title:	Assessment of side effects of ICI 90420-I-O-WG on the honey bee (<i>Apis mellifera</i> L.) in the field during daily bee-flight	
Project/Report number:	93041/01-AmF	
Author(s):	Tornier, I.	
Date of report:	1993	
Published:	Not published	
Testing facility:	GAB Biotechnologie GmbH, Niefern-Öschelbronn, Germany	
Test substance:	lambda-Cyhalothrin WG formulation, 5.0% w/w	
Study dates	29 June – 15 July 1993	
GLP:	Yes	
Deficiencies:	None	
Reliability indicator	1	

		Official use only
<p>Materials and methods: 50 g/kg WG formulation (ICI 90420-I-O-WG (=YF8048)), lambda-Cyhalothrin content of 5.0% w/w.</p> <p>The side-effects of lambda-Cyhalothrin, formulated as a 50 g/kg WG (ICI 90420-I-O-WG), were tested on the honey bee (<i>Apis mellifera</i> L.) in the field according to the guideline for the testing of crop protection products of the BBA, part VI. Lambda-Cyhalothrin was applied to a field of flowering <i>Phacelia tanacetifolia</i> during bee flight at a rate of 15 g a.s./ha in a volume of 200 L/ha. Four normally developed bee colonies were used for the treatment, placed near the test field. Four hives were used as controls, sited about 4 km away from the treated field. Spraying was done while the bees were actively foraging. The effect of the application on the bee colonies was examined by comparing the bees of the test substance treatment to the bees of the control and by comparing the pre- and post-application results of the following observations:</p> <ul style="list-style-type: none"> • mortality in front of the hives and in the field; • changes in numbers of bees per colony and brood; • behaviour of bees on flowers and at the entrance to the hives. <p>Observations of mortality and activity were performed at least daily for 2-6 days in advance of and 7-8 days after the application. Hive strength and brood development was checked once</p>		

before application and once after. Two replicate tests were conducted, starting on different dates.

Findings:

In the first test there was an increase in mortality observed on the day of treatment. In the second test, no increase in mortality was observed. Reversible effects of poisoning were observed among the foraging bees in both tests on the day of application. The bees thus affected seemed to recover within a few hours. A repellence effect was observed in both tests on the day of application, with the bees avoiding the contaminated flowers. There was no evidence of test substance effects on the strength of the colonies or the development of the brood. No abnormal behaviour was observed at the hives.

Lambda-Cyhalothrin WG applied to flowering crop during active bee foraging, at a rate of 15 g a.s./ha, had no lasting side-effects on honey bees in the field. A repellence effect of the *lambda-Cyhalothrin* was observed. Bees were affected for a maximum of one day.

Evaluation by Competent Authorities	
EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	Not relevant
Materials and Methods	[REDACTED]
Results and discussion	[REDACTED]
Conclusion	[REDACTED]
Reliability	
Acceptability	
Remarks	

98/8 Doc IIIA section No.	7.5.4.1/16	Acute toxicity to honey bees and other beneficial arthropods, for example predators
91/414 Annex	II	Bees: Acute toxicity
Point addressed	8.3.1.1	

		Official use only
Reference point (location) in dossier	7.5.4.1/16	
Title:	Assessment of side effects of ICI 90420-I-O-WG on the honey bee (<i>Apis mellifera</i> L.) in the field by application during bee-flight	
Project/Report number:	92038/02-AmF	
Author(s):	Tornier, I.	
Date of report:	1993	
Published:	Not published	
Testing facility:	GAB Biotechnologie GmbH, Niefern-Öschelbronn, Germany	
Test substance:	lambda-Cyhalothrin WG formulation, 5.03% w/w	
Study dates	06 July – 17 July 1992	
GLP:	Not given	
Deficiencies:	None	
Reliability indicator	1	

		Official use only
<p>Materials and methods: 50 g/kg WG formulation (ICI 90420-I-O-WG (=YF8048)), lambda-Cyhalothrin content of 5.03% w/w.</p> <p>The side-effects of lambda-Cyhalothrin, formulated as a 50 g/kg WG (ICI 90420-I-O-WG), were tested on the honey bee (<i>Apis mellifera</i> L.) in the field according to the guideline for the testing of crop protection products of the BBA, part VI. Lambda-Cyhalothrin was applied to a field of flowering <i>Phacelia tanacetifolia</i> during bee flight at a rate of 15 g a.s./ha in a volume of 200 L/ha. Three normally developed bee colonies were used for the treatment, placed near the test field. Three hives were used as controls, sited about 3 km away from the treated field. Spraying was done while the bees were actively foraging. The effect of the application on the bee colonies was examined by comparing the bees of the test substance treatment to the bees of the control and by comparing the pre- and post-application results of the following observations:</p> <ul style="list-style-type: none"> • mortality in front of the hives and in the field; • changes in numbers of bees per colony and brood; • behaviour of bees on flowers and at the entrance to the hives. <p>Observations of mortality and activity were performed at least daily for 3 days in advance of and 7 days after the application. Hive strength and brood development was checked once</p>		

<p>before application and once after. Two replicate tests were conducted, starting on different dates.</p> <p>Findings: In both tests there was no increase in mortality observed. Symptoms of paralysis were seen in a large number of bees on the day of treatment in both tests and also on the day following application in the first test. A repellence effect was observed in both tests on the day of application, with the bees avoiding the contaminated flowers. There was no evidence of test substance effects on the strength of the colonies or the development of the brood during the test periods or in further assessments at 2 and 4 weeks after application. Immediately after application, increased activity was observed at hive entrances in both test runs. In the following hours activity reduced. In the first test numerous bees were seen on the hive floor, exhibiting signs of paralysis. The bees were very aggressive on the day of application.</p> <p><i>Lambda-Cyhalothrin</i> WG applied to flowering crop during active bee foraging, at a rate of 15 g a.s./ha, had no lasting side-effects on honey bees in the field. No increase in mortality was observed, though there were signs of paralysis. A repellence effect of <i>lambda-Cyhalothrin</i> was observed. Bees were affected for a maximum of one day.</p>	
---	--

Evaluation by Competent Authorities	
EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	Not relevant
Materials and Methods	[REDACTED]
Results and discussion	[REDACTED]
Conclusion	[REDACTED]
Reliability	[REDACTED]
Acceptability	[REDACTED]
Remarks	[REDACTED]

98/8 Doc IIIA section No.	7.5.4.1/17	Acute toxicity to honey bees and other beneficial arthropods, for example predators
91/414 Annex	IIA	Bees: Acute toxicity
Point addressed	8.3.1.1	

		Official use only
Reference point (location) in dossier	7.5.4.1/17	
Title:	Assessment of side effects of Karate WG on the Honey Bee (<i>Apis mellifera</i> L.) in the field following application during bee flight in Spain	
Project/Report number:	98139/S2-BFEU/C	
Author(s):	Balluff, M.	
Date of report:	2000	
Published:	Not published	
Testing facility:	GAB Biotechnologie GmbH, Niefern-Öschelbronn, Germany	
Test substance:	lambda-Cyhalothrin WG formulation, 5.32% w/w	
Study dates	24 May – 21 June 1999	
GLP:	Yes	
Deficiencies:	None	
Reliability indicator	1	

		Official use only
<p>Materials and methods: 50 g/kg WG formulation of (YF8048A), lambda-Cyhalothrin content of 5.32% w/w.</p> <p>The side-effects of lambda-Cyhalothrin, formulated as a 50 g/kg WG (YF8048A), were tested on the honey bee (<i>Apis mellifera</i> L.) in the field in Spain according to the guideline for the testing of crop protection products of the BBA, part VI, and EPPO guideline no. 170. Lambda-Cyhalothrin was applied to oilseed rape (<i>Brassica napus</i>) at 20 and 25 g a.s./ha in a volume of 200 L/ha. Untreated oilseed rape fields served as control. A toxic standard, dimethoate 400 g/L EC, was applied at a rate of 0.6 L/ha. Lambda-Cyhalothrin and dimethoate were applied in separate fields during bee flight activity. Treatment fields were separated by at least 3 km and were not close to other flowering crops attractive to bees. Four normally developed, queen-right bee colonies were used per treatment, placed near each test field. Spraying was done when the crop was in full bloom and bees were actively foraging. The effect of the application on the bee colonies was examined by comparing the bees of the test substance treatment to the bees of the control and toxic standard and by comparing the pre- and post-application results of the following observations:</p> <ul style="list-style-type: none"> • mortality in front of the hives and in the field; • flight intensity in the field; • behaviour of bees at the entrance to the hives; 		

<ul style="list-style-type: none"> • development of the bee brood. 	<p>Observations of mortality and activity were performed daily for 2 days in advance of and 7 days after the application. Brood development was checked once before application and twice after.</p> <p>Findings: <i>Lambda-Cyhalothrin</i> caused a slight dose-related increase in honey bee mortality for two days at both rates tested. The toxic standard treatment caused a significant increase in mortality. The ratio of average post-application mortality to average pre-application mortality ($Q_{M(average)}$) was 1.9 in the <i>lambda-Cyhalothrin</i> 20 g a.s./ha treatment, 1.9 in the 25 g a.s./ha treatment, 0.5 in the control, and 3.3 in the toxic standard treatment. Flight intensity dropped after application of the two rates of <i>lambda-Cyhalothrin</i> and the toxic standard. On application day, flight intensity remained at a low level in all the chemical treatments. After application day, flight activity increased in all treatments. Results of pollen analysis collected five days after application demonstrated that the bees were collecting mainly on the treated fields. Bees showing symptoms of poisoning were found lying in front of the hives in the two <i>lambda-Cyhalothrin</i> treatments and the toxic standard shortly after application. On evaluation days before treatment, and on days 1-7 after treatment, no abnormal behaviour of bees in front of the hives or in the field was observed. Similar brood data were obtained for the control and test substance treatments, so the observations were judged as normal and in accordance with the seasonal development of the bee colonies.</p> <p><i>Lambda-Cyhalothrin</i> applied at rates of up to 25 g a.s./ha had no long-term side-effects on honey bees in the field. Bees were affected for a maximum of two days after application.</p>
---	---

Evaluation by Competent Authorities	
EVALUATION BY RAPPORTEUR MEMBER STATE	
Date	Not relevant
Materials and Methods	<div style="background-color: black; height: 15px; width: 100%;"></div> <div style="background-color: black; height: 15px; width: 100%;"></div> <div style="background-color: black; height: 15px; width: 100%;"></div> <div style="background-color: black; height: 15px; width: 100%;"></div> <div style="background-color: black; height: 15px; width: 100%;"></div> <div style="background-color: black; height: 15px; width: 100%;"></div>
Results and discussion	
Conclusion	<div style="background-color: black; height: 15px; width: 100%;"></div>
Reliability	
Acceptability	
Remarks	

98/8 Doc IIIA section No.	7.5.4.1/18	Acute toxicity to honey bees and other beneficial arthropods, for example predators
91/414 Annex Point addressed		Other arthropods

		Official use only
Reference point (location) in dossier	7.5.4.1/18	
Title:	A laboratory dose-response study to evaluate the effects of <i>lambda</i> -Cyhalothrin (CS formulation) on the predatory mite <i>Typhlodromus pyri</i> Scheuten (Acari: Phytoseiidae)	
Project/Report number:	Z005TPL-CV	
Author(s):	Aldershof, S.A.	
Date of report:	1999	
Published:	Not published	
Testing facility:	MITOX Stichting Bevordering Duurame, PO Box 92260, Amsterdam, The Netherlands	
Test substance:	<i>lambda</i> -Cyhalothrin CS formulation, 9.6% w/w	X1
Study dates	4 – 22 March 1999	
GLP:	Yes	X2
Deficiencies:	None	
Reliability indicator	1	

		Official use only
Materials and methods:	<p>100 g/L CS 'Zeon' formulation (WF2639), <i>lambda</i>-Cyhalothrin content of 9.6% w/w.</p> <p>A worst-case exposure laboratory dose-response study was carried out to determine the effects of <i>lambda</i>-Cyhalothrin, as a representative formulation ('Karate' Zeon (WF2639), containing micro-encapsulated <i>lambda</i>-Cyhalothrin at 100 g/L) on the predatory mite <i>Typhlodromus pyri</i>. Juvenile test organisms were exposed to dried residues of test substance in ventilated glass cages ("coffin cells") over 7 days. <i>Lambda</i>-Cyhalothrin was applied at rates equivalent to 0.5, 1, 2, 3, 4, 6 and 12 mg a.s./ha. A water control and a toxic standard treatment (formulated dimethoate at a nominal rate of 0.24 g a.s./ha) were included in the test. Five replicate cages were used per treatment, each containing 20 protonymphs from a 24 hour cohort.</p> <p>Fecundity assessments were performed with females selected from the mortality NOEC treatment (2 mg a.s./ha) and one treatment above and below this concentration (1 and 3 mg a.s./ha), as well as the controls. To assess fecundity, mites were confined on untreated open glass plates for a further 7 days. Three oviposition test units were prepared for each treatment. All surviving individuals were transferred to oviposition units such that original groups of mites were kept the same. Males from the same treatment, or from the test cohort, were then added or removed to give a minimum sex ration of 1 male to 5 females in each unit.</p> <p>The LC₃₀ and LC₅₀ were determined from probit analysis. Fecundity (eggs produced per</p>	

<p>female) was compared to controls using Fisher's LSD test.</p> <p>Findings: Control mortality (including escapees) was 10% after 7 days. Control escape rate was 5%. Maximum escape rate in the lambda-Cyhalothrin treatments (corrected for control) was at maximum 7%. All replicates were used in analysis. Mortality (corrected for control) in the toxic reference was 98% after 7 days. The 7 day LC₃₀ and LC₅₀ values for lambda-Cyhalothrin, formulated as WF2639, were calculated to be 2.9 and 3.7 mg a.s./ha, respectively.</p> <p>Mites in the water controls produced 7.2 eggs per female over the 7 day fecundity assessment period, meeting the test validity criteria. Delayed development of treated mites resulted in a later onset of egg production and consequently reduced reproduction over the 7-day experimental period. It was found that all three test rates of lambda-Cyhalothrin resulted in egg production rates significantly different from the control (P<0.040). Fecundity at the lowest rate, 1 mg a.s./ha, resulted in a 63% reduction in fecundity compared to controls.</p> <p>The 7-day LR₅₀ value for residual exposure of <i>T. pyri</i> to lambda-Cyhalothrin, as a 10CS formulation WF2639, under laboratory worst-case test conditions was 3.7 mg a.s./ha.</p>	
--	--

Evaluation by Competent Authorities	
	EVALUATION BY RAPPORTEUR MEMBER STATE
Date	Not relevant
Materials and Methods	<div style="background-color: black; height: 15px; width: 100%;"></div> <div style="background-color: black; height: 15px; width: 100%;"></div> <div style="background-color: black; height: 15px; width: 100%;"></div> <div style="background-color: black; height: 15px; width: 100%;"></div> <div style="background-color: black; height: 15px; width: 100%;"></div> <div style="background-color: black; height: 15px; width: 100%;"></div> <div style="background-color: black; height: 15px; width: 100%;"></div>
Results and discussion	<div style="background-color: black; height: 15px; width: 100%;"></div>
Conclusion	<div style="background-color: black; height: 15px; width: 100%;"></div> <div style="background-color: black; height: 15px; width: 100%;"></div>
Reliability	<div style="background-color: black; height: 15px; width: 100%;"></div>
Acceptability	<div style="background-color: black; height: 15px; width: 100%;"></div>
Remarks	

98/8 Doc IIIA section No.	7.5.4.1/19	Acute toxicity to honey bees and other beneficial arthropods, for example predators
91/414 Annex Point addressed		Other arthropods

		Official use only
Reference point (location) in dossier	7.5.4.1/19	
Title:	A laboratory dose-response study to evaluate the effects of lambda-Cyhalothrin on the predatory mite <i>Typhlodromus pyri</i> Scheuten (Acari: Phytoseiidae)	
Project/Report number:	Z004TPL-CV	
Author(s):	Bakker, F.M.	
Date of report:	1999	
Published:	Not published	
Testing facility:	MITOX Stichting Bevordering Duurame, PO Box 92260, Amsterdam, The Netherlands	
Test substance:	lambda-Cyhalothrin WG formulation, 5.32% w/w	
Study dates	03 – 25 December 1998	
GLP:	Yes	
Deficiencies:	None	
Reliability indicator	1	

		Official use only
Materials and methods: 50 g/kg WG formulation (YF8048A), lambda-Cyhalothrin content of 5.32% w/w. A worst-case exposure laboratory dose-response study was carried out to determine the effects of lambda-Cyhalothrin, as a representative formulation (50 g/kg WG (YF8048A)), on the predatory mite <i>Typhlodromus pyri</i> . Juvenile test organisms were exposed to dried residues of test substance in ventilated glass cages (“coffin cells”) over 7 days. Lambda-Cyhalothrin was applied at rates equivalent to 4.7, 7.1, 10.7, 16 and 24 mg a.s./ha. A water control and a toxic standard treatment (formulated dimethoate at a nominal rate of 0.24 g a.s./ha) were included in the test. Five replicate cages were used per treatment, each containing 20 protonymphs from a 24 hour cohort. Fecundity assessments were performed with females selected from the NOEC treatment (4.7 mg a.s./ha) and two treatments above this concentration (7.1 and 10.7 mg a.s./ha), as well as the controls. To assess fecundity, mites were confined on untreated open glass plates for a further 7 days. A maximum of 20 females per treatment were used, divided over four test units, except in the 10.7 mg a.s./ha treatment group. Males from the same treatment were added to give a sex ratio exceeding 1 male to 5 females. For the 10.7 mg a.s./ha treatment group, mite development was retarded to the extent that males and females could not be distinguished at the end of the acute phase. In this case 20 from the 23 surviving individuals were impartially divided over two oviposition units in two groups of 10.		

98/8 Doc IIIA section No.	7.5.4.1/20	Acute toxicity to honey bees and other beneficial arthropods, for example predators
91/414 Annex Point addressed		Other arthropods

		Official use only
Reference point (location) in dossier	7.5.4.1/20	
Title:	A laboratory test to determine the effects of <i>lambda</i> -Cyhalothrin 100 g/L CS (WF2639) on the parasitoid, <i>Aphidius rhopalosiphi</i>	
Project/Report number:	ZEN-99-1/C	
Author(s):	Baxter, I.	
Date of report:	1999	
Published:	Not published	
Testing facility:	Agrochemical Evaluation Unit, University of Southampton, Southampton, UK	
Test substance:	<i>lambda</i> -Cyhalothrin CS formulation, 9.6% w/w	X1
Study dates	10 – 29 June 1999	
GLP:	Yes	X2
Deficiencies:	None	
Reliability indicator	1	

		Official use only
Materials and methods:	100 g/L CS 'Zeon' formulation (WF2639), <i>lambda</i> -Cyhalothrin content of 9.6% w/w. Adults of the parasitoid wasp <i>Aphidius rhopalosiphi</i> were exposed to fresh residues of <i>lambda</i> -Cyhalothrin 10CS (WF2639), applied to glass plates in a dose-response test. The effects of <i>lambda</i> -Cyhalothrin applied at equivalent rates of 0.125, 0.3, 0.5, 1.0 and 1.5 g a.s./ha were assessed. Three replicates exposure units were used for each treatment, containing 10 wasps each, with at least five females per replicate. The percentage "mortality" of wasps (derived from the numbers of insects left moribund or dead after 48 hours) was used to generate LC ₃₀ and LC ₅₀ values using a probit analysis. A water control and toxic reference treatment (formulated dimethoate at 0.17 g a.s./ha) were included in the test. To assess effects on fecundity, female wasps from the control and lowest three treatment rates of <i>lambda</i> -Cyhalothrin (15 wasps per treatment) were removed from the residue exposure chambers and individually confined over pots of untreated, aphid-infested barley for 24 hours. The wasps were then removed and the number of parasitised aphid mummies that developed was recorded 10 days later.	X3
Findings:	The 48 hour LR ₃₀ and LR ₅₀ values for <i>lambda</i> -Cyhalothrin, formulated as WF2639, were calculated to be 0.78 and 1.06 g a.s./ha, respectively. There was 3% control mortality (one wasp). There was 100% mortality in the dimethoate treatment within 24 hours of test start. In	

the fecundity assessments, the mean number of mummies per female were 22.5, 24.9, 23.7 and 24.3 for the control, 0.125, 0.3 and 0.5 g a.s./ha treatments of lambda-Cyhalothrin, respectively. None of the lambda-Cyhalothrin treatments differed significantly from the control (t-test, P>0.05).

The LR₅₀ value for lambda-Cyhalothrin, a 10CS formulation (WF2639), to *A. rhopalosiphi* under laboratory worst-case test conditions was 1.06 g a.s./ha.

Evaluation by Competent Authorities	
	EVALUATION BY RAPporteur MEMBER STATE
Date	Not relevant
Materials and Methods	[REDACTED]
	[REDACTED]
	[REDACTED]
	[REDACTED]
	[REDACTED]
	[REDACTED]
Results and discussion	[REDACTED]
Conclusion	[REDACTED]
Reliability	[REDACTED]
Acceptability	[REDACTED]
Remarks	[REDACTED]