

Shaughnessy No.: 128831

DP Barcode: D161426

Date out of EFGWB: MAR 18 1991

TO: R. Cool/L. Pemberton
Product Manager #41
Registration Division (H7505C)

FROM: Emil Regelman, Supervisory Chemist
Chemistry Review Section #2
Environmental Fate and Ground Water Branch

THRU: Hank Jacoby, Chief
Environmental Fate and Ground Water Branch
Environmental Fate and Effects Division (H7507C)

Attached, please find the EFGWB review of ...

Reg./File #: 910R0006 (Reg. No. for chemical is 3125-351)

Chemical Name: Cyano (4-fluoro-3-phenoxyphenyl) methyl-3-(2,2-dichloro-ethenyl)-2,2-dimethyl-cyclopropane-carboxylate

Type Product: Insecticide

Common Name: Cyfluthrin

Company Name: Mobay Corporation

Applying Agency: Oregon Department of Agriculture

Purpose: To review application for an Emergency Exemption Permit for use of cyfluthrin to control pear psylla

Date Received: 19 Feb. 1991

Date Completed: 7 March 1991

Action Code: 510

EFGWB #(s): 91-0413

Total Reviewing Time: 0.5 day

Deferrals to: Ecological Effects Branch, EFED

Science Integration and Policy Staff, EFED

Non-Dietary Exposure Branch, HED

Dietary Exposure Branch, HED

Toxicology Branch

1. CHEMICAL:

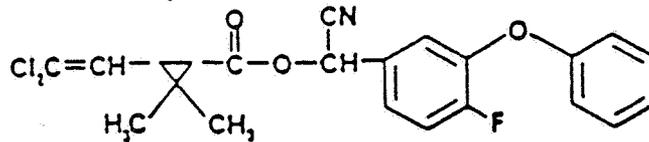
Chemical name: Cyano (4-fluoro-3-phenoxyphenyl) methyl-3-(2,2-dichloroethenyl)-2,2-dimethyl-cyclopropane-carboxylate

CAS no.: 68359-37-5

Common name: Cyfluthrin

Trade name: Baythroid 2EC

Chemical structure:



Formulations: Cyfluthrin.....25.0%
Inert Ingredients.....75.0%

Physical/Chemical properties of active ingredient:

Physical characteristics: Viscous amber oil, partially crystalline
Molecular formula: $C_{22}H_{18}FNO_3Cl_2$
Molecular weight: 434.3
Vapor pressure: 3.3×10^{-8} mm Hg @ 20°C
Solubility: $1-2 \times 10^{-6}$ g/100 mL at 20°C
Octanol/water partition coefficient: 420,000

2. STUDY/ACTION TYPE:

To review application by the Oregon Department of Agriculture for an Emergency Exemption Permit for use of cyfluthrin to control pear psylla.

3. STUDY IDENTIFICATION:

Wright, B.D. CORRESPONDENCE TO R. COOL - SPECIFIC EXEMPTION FOR USE OF CYFLUTHRIN (BAYTHROID) FOR THE CONTROL OF PEAR PSYLLA IN OREGON. Oregon Department of Agriculture, Salem, OR; Written 4 February 1991; Received by EPA 6 February 1991.

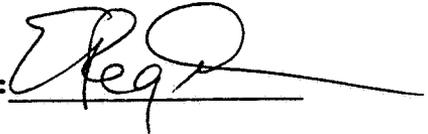
4. REVIEWED BY:

Gail Maske
Chemist, Review section #2
OPP/EFED/EFGWB

Signature: 
Date: 7. March '91

5. APPROVED BY:

Emil Regelman
Supervisory Chemist
Review section #2
OPP/EFED/EFGWB

Signature: 
Date: MAR 18 1991

6. CONCLUSIONS:

The Oregon Department of Agriculture is requesting an Emergency Exemption for use of cyfluthrin to control pear psylla. This application is in accordance with Section 18 of the Federal Insecticide, Fungicide, and Rodenticide Act.

Based on the environmental fate data available, EFGWB concurs with the Emergency Exemption request for use of cyfluthrin to control pear psylla in pear trees and reduce pear russeting. However, cyfluthrin is toxic to aquatic life and invertebrates. Therefore, cyfluthrin should not be used around surface water which contains aquatic life or where runoff to surface water containing aquatic life is possible, and during periods when invertebrates are active.

7. RECOMMENDATIONS:

See Conclusions.

NOTE TO REGISTRATION SUPPORT:

For the past three years, the state of Oregon has requested emergency exemptions for use of cyfluthrin on pear psylla. Additionally, the state of Washington has requested similar emergency exemptions three times. EFGWB is concerned that the Emergency Exemption (Section 18) is being used in lieu of registration of cyfluthrin for orchard uses (Perhaps this should be a 24C action instead of a Section 18?). Since this use pattern is not on the LUIS report and the registrant has not shown written intention of registering cyfluthrin for this use, Registration Support may need to discuss with the PM the need to determine the data gaps for the registration of cyfluthrin for orchard use and subsequently request this data. For example, the registrant has not submitted a terrestrial field dissipation in orchards study. Therefore, it will be increasingly difficult for EFGWB to concur with future Emergency Exemptions for use of cyfluthrin in orchards.

8. BACKGROUND:

Cyfluthrin was registered as an unconditional indoor use general pesticide and for use on cotton crops on 30 December 1987. In August 1989 it was registered for use in imported German hops. TEMPO 2 was registered 3 March 1988 for use on trees, ornamentals, and home lawns.

Baythroid 2 (active ingredient is cyfluthrin) is an emulsible concentration herbicide currently registered for use on cotton (classified as a terrestrial food crop) at a single application rate of 0.0125-0.1 lbs ai/acre/application and a maximum total seasonal application of 0.89 lbs ai/acre/season and for use in German hops. An application by the registrant to amend the Baythroid 2 label to allow applications to alfalfa, soybeans, sunflowers, sweet corn, broccoli, brussel sprouts, cabbage, cauliflower, carrots, celery, lettuce, peppers, radish, spinach, and tomatoes was conditionally concurred by EFGWB providing the registrant agrees to satisfy the remaining outstanding data requirements. Single application rates of 0.012-0.050 lbs ai/acre/application with a maximum total seasonal application of 0.13-0.44 lbs ai/acre/season would be used these additional uses.

Cyfluthrin has a toxicological classification of two for human exposure. However, its toxicity to aquatic life and invertebrates appears to be greater.

9. DISCUSSION:

Pear psylla is one of the most serious pear pests worldwide. The pear psylla feeds and reproduces exclusively on pear. Pear psylla over-winters in the adult stage on trees inside and outside pear orchards. In late winter, adults begin to migrate back to pear trees and as temperatures rise, egg laying begins. Nymphs emerge just before bloom as the first green tissue begins to show. These immature pear psylla, nymphs, cause two types of damage while feeding on the pear tree foliage.

1. A toxin is injected into the tree which in the long run is debilitating and reduces vigor and ultimately yield.
2. A copious amount of "honeydew" is produced by the feeding nymph which causes russeting of the skin and serves as a medium for sooty mold which causes a black appearance and results in increased fruit cullage.

If the pear psylla is not controlled during the pre-bloom season, control is difficult throughout the remainder of the year.

Commercially planted pear varieties have very little useful levels of resistance to pear psylla. There are several cultural practices employed to reduce psylla damage.

1. Summer pruning to reduce vigor and removal of lush growth which is preferred by pear psylla.

2. Use of overhead irrigation to wash psylla honeydew off the pears.

However, these are not sufficient to keep psylla population under control. Other methods are available but not adequate to keep population at sub-economic levels or economically practical.

1. Use of nitrogen fertilizer increases tree susceptibility to psylla. However, ceasing to fertilize would reduce the yields and quality.
2. Biological control is not adequate to keep the pear psylla under control.
3. Pear psylla can quickly develop resistance to pyrethroids which is the other registered possibility. The pyrethroids reduced populations only by 85 to 95%.
4. Spray oil is not effective by itself and does not control the pear psylla sufficiently.
5. Heavy oil and large amounts of lime sulfur is not acceptable since it greatly reduces yield.
6. The pear psylla has developed resistance against the organo-phosphates and endosulfan.
7. Carbamates insecticides are ineffective against pear psylla.
8. Morestan, oxythioquinox, is not effective against psylla adults. Furthermore, morestan cannot be used in some locations because of phytotoxicity.
9. Amitraz and mancozeb do not have adequate control the psylla adults. In addition, the use of amitraz to control pre-bloom psylla can accelerate resistance development to amitraz since it is used very heavily to control summer pear psylla.

It is estimated that 50% of the yearly pear cullage is due to pear psylla damage. The Oregon State University Extension Service estimates psylla damage could cause losses well in excess of 1 million dollars. In addition to the immediate and direct effect on the fruit, uncontrolled psylla populations will cause tree decline and dramatic yield decreases within one or two years.

An emergency exemption for use of cyfluthrin to control pear psylla in Oregon was approved in Oregon in 1989 and 1990. Cyfluthrin was used primarily as a dormant plus oil or as a pink spray in combination with Moresstan. During the two year period, there were very few second applications required and performed very well. Cyfluthrin definitely resulted in less total psylla pesticide usage and a higher quality product. In 1990, single sprays of cyfluthrin provided a 98 to 100% reduction of over-wintering adults.

The state of Oregon is proposing to use cyfluthrin on 15,000 acres of pears using a maximum application rate of 0.05 ai/A, two times. Therefore, a total 750 gallons of product (1500 lbs. active ingredient) will be used under this emergency exemption. Applications will be made between 20 February 1991 until bloom. There will be no applications after 20 April 1991.

10: COMPLETION OF ONE-LINER:

See attached one-liner.

11: CBI APPENDIX:

N/A