US EPA ARCHIVE DOCUMENT

Branch

113201
SHAUGHNESSY NO.

26
REVIEW NO.

EEB BRANCH REVIEW

DATE: IN 5-30-85 OUT 6-6-85

FILE OR REG. NO. 85-WA-06

PETITION OR EXP. PERMIT NO.

DATE OF SUBMISSION

DATE RECEIVED BY HED 5-17-85

RD REQUESTED COMPLETION DATE 5-30-85

EEB ESTIMATED COMPLETION DATE 6-14-85

RD ACTION CODE/TYPE OF REVIEW 510/Section 18

TYPE PRODUCT(S): I, D, H, F, N, R, S Fungicide

DATA ACCESSION NO(S).

PRODUCT MANAGER NO. D. Stubbs (41)

PRODUCT NAME(S) Ronilan 50W

COMPANY NAME State of Washington

SUBMISSION PURPOSE Proposed Section 18 for use on lima beans in Washington State

SHAUGHNESSY NO.	CHEMICAL & FORMULATION	% A.I.
113201	Vinclozolin	50%

EEB BRANCH REVIEW

Vinclozolin (Ronilan)

100 Submission Purpose and Label Information

100.1 Submission Purpose and Pesticide Use

The State of Washington Department of Agriculture has requested an Emergency Exemption (Section 18 action) for the use of Ronilan 50W (active ingredient vinclozolin) to control white mold on lima beans.

100.2 Formulation Information

Ronilan 50W

Active Ingredient 3-(3,5-Dichlorophenyl)-5-ethenyl-5-methyl-2,4-oxazolididinedione.	50%
Inert Ingredients	50%

100.3 Application Methods, Directions, Rates (from proposal letter)

A maximum of two applications of one pound per acre of Ronilan 50W (0.5 lbs ai) each will be made approximately 7 to 10 days apart.

Applications will begin at 5 percent to 10 percent of bloom, between June 15 and September 15, depending on planting date.

Ground rigs with 40 to 100 gallons of water/acre will be used. Aerial applications will be made also.

100.4 Target Organism

White Mold (*Sclerotinia sclerotiorum*)

100.5 Precautionary Labeling (from Ronilan 50W label)

"Do not apply to wetlands and other water bodies. Do not contaminate water by cleaning of equipment or disposal of wastes."

100.6 Proposed Section 18 Program

100.6.1 Nature and Scope of Emergency

The letter of request submitted by the State of Washington Department of Agriculture is appended to this review. Please refer to it for a discussion of the emergency conditions.

100.6.2 Date, Duration

Ronilan 50W will be used from June 15 to September 15.

100.6.3 Treatment Areas

Approximately 2,500 acres will be treated within the counties of Benton, Franklin and Walla Walla.

101 Hazard Assessment

101.1 Likelihood of Adverse Effects to Nontarget Organisms

Terrestrial Species

Available acute and subacute toxicity data indicate that technical vinclozolin is practically nontoxic to birds. A single dose oral LD_{50} value in excess of 2510 mg/kg was reported for the bobwhite quail. Eight-day dietary LC_{50}'s greater than 5620 ppm were determined for both the bobwhite quail and the mallard.

The available acute data also indicate a low mammalian toxicity for vinclozolin. Acute oral LD_{50}'s of greater than 10 g/kg and greater than 13 g/kg were determined for rats.

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Following an initial application of vinclozolin at a rate of 0.5 lb ai per acre, maximum expected residues on typical avian and mammalian dietary matter would range from 3.5 ppm on fruit to 120 ppm on sparse foliage. These residues are well below the acute toxicity values for waterfowl and upland bird species.

A second treatment may be made 7 to 10 days later. Maximum expected accumulated residues from a repeat application will not approach the LC_{50} criteria used to indicate acute hazard to terrestrial species.

The available data on avian reproduction suggest that this chemical begins to affect egg fertility at concentrations greater than 5 ppm. The Canadian Wildlife Service has found evidence that vinclozolin can affect avian testicular development (memo R. Balcomb August 1984). Nonetheless, under the exemption program, accumulated residues from two applications of the chemical (7 to 10 days apart) are not expected to pose a significant chronic hazard to avian species.

Aquatic Organisms

Unfortunately, the acute toxicity data for freshwater fish are not reliable (EEB Review Out: February 20, 1980, by M. Rexrode). A precipitate formed in all the test vessels of both the bluegill and rainbow trout studies. No precipitate was reported for the study on daphnids and an LC_{50} of 3.65 ppm was determined for *Daphnia magna*.

Assuming a direct application to water, vinclozolin treatments at maximum proposed rates (0.5 lbs ai/A) would produce the following residues:

Depth of water (ft)	Residues (ppm)
0.5	0.367*
1.0	0.183
2.0	0.092

*Exceeds 1/10 the LC_{50} of *Daphnia magna*.

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As tabulated below, the available environmental fate information indicates that vinclozolin hydrolyzes with the shortest half-lives at alkaline pH's.

pH	Temperature 25 °C	35 °C
3	70 days	22.5 days
6	61 hours	22.5 hours
9	12.6 minute	4.8 minute

Most aquatic organisms tolerate pH of 6 to 9, thus a half-life of a few hours to a few days would be expected for vinclozolin in a warm water environment (25 °C). The half-life of the chemical could be greatly extended in cold water habitat (12 °C).

Based on the available data, significant adverse acute effects to populations of aquatic organisms are not anticipated for use of vinclozolin under this Emergency Exemption. Only 2500 acres of lima beans will be treated. Maximum rates will only be used on a portion of the total permitted area. Residues resulting from direct application of maximum label rates of the fungicide to shallow water may exceed theoretical Restricted Use triggers, however, under this use pattern, direct contamination of the aquatic environment is considered inadvertent and not a significant route of exposure. Residues expected to reach water from drift and/or runoff should not approach trigger levels.

101.3 Endangered Species Considerations

Use of vinclozolin under this Emergency Exemption should not significantly affect populations of federally Endangered/Threatened species. The buffalo is the only species listed as occurring in the counties proposed to receive pesticide treatment. Vinclozolin is practically nontoxic to mammalian species.

101.4 Adequacy of Toxicity Data

A thorough assessment of potential hazards to aquatic organisms could not be made due to the lack of reliable acute toxicity data on freshwater fish.
Note to Reviewers: Requests for acceptable data must be made at the time of the next Section 3 Registration.

An acute contact toxicity study on honey bees must be submitted for a Section 3 registration of a lima bean use.

102. Conclusions

The available data on vinclozolin indicate that use of the chemical under the proposed Emergency Exemption should not produce significant adverse effects to populations of nontarget aquatic and terrestrial wildlife including federally Endangered/ Threatened species. Please refer to Section 101 of this review for details.

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C. Alan Pettibone
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STATE OF WASHINGTON
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May 17, 1985

CERTIFIED

RECEIVED 5/24/85

Donald Stubbs, Head
Emergency Response Section
Registration Division (TS-767C)
401 M Street Southwest
Washington, DC 20460

RE: Emergency use of vinclozolin (Ronilan), 3-(3,5-dichlorophenyl)-5-ethenyl-methyl-2,4-oxazolidinedione on lima beans

Section 18 of amended FIFRA provides the Administrator may, at his discretion, exempt any state or federal agency from provisions of FIFRA if he determines emergency conditions exist which require such exemptions.

Part 166, Chapter 1, Title 40, Rules and Regulations, provides criteria for emergency exemptions. We are applying for emergency use of Ronilan 50W to control white mold on lima beans. Information requested in 40 CFR 166.3(a) and by policy is as follows:

1. White mold is caused by Sclerotinia, a fungal disease endemic to beans in Washington state. Sclerotia overwinter in the soil and germinate to form apothecia under cover of heavy foliage. They may survive in the soil for several years. They are moved about on plant materials, farm implements and irrigation water. The disease rots pods, beans and stems and foliage. Infection occurs most frequently under moist, cool weather conditions. High humidity under sprinkler irrigation forms favorable conditions for disease development. Virtually all of Washington's lima bean crop is grown under sprinkler irrigation. Because of the ability of the sclerotia to survive several seasons and the multitude of susceptible host species, innoculum is always present.

   The losses from Sclerotinia occur from 1) loss of yield in the field 2) fields unharvested because cost of harvesting was greater than the yield 3) downgrading at processing due to orange coloration caused by the disease in otherwise acceptable beans.

2. The pest to be controlled is white mold/Sclerotinia sclerotiorum.

3. Benomyl is the material of choice, and widely used, for white mold control; however, resistance to benomyl has been demonstrated in many fungal disease populations on the Pacific coast. Use of benomyl causes problems because Botrytis (grey mold) is also a problem in the fields, and benomyl resistant populations of Botrytis are likely to increase if Sclerotinia populations decrease with use of benomyl. Because of its similarity to benomyl, the same objections exist for thiophanate-methyl (Topsin M). Ziram is known to be ineffective. Research data indicate captan gives virtually no control with two applications.

Sclerotia persist through 5-year crop rotations, and innoculum from other susceptible crops is always present. There are no varieties available with acceptable levels of resistance.

The major way of reducing losses is through irrigation water manipulation. Unfortunately, the need for water during the hottest part of the summer is so great that growers cannot stop irrigating for the time necessary to control the disease without loosing an equivalent amount of crop to severe water stress.

4. Ronilan 50W, EPA reg. no. 7969-53, manufactured by BASF Wyandotte Corporation.

5. (i) A maximum of two applications of one pound of Ronilan 50W each should be made approximately seven to ten days apart. We anticipate the maximum treated Washington lima bean acreage will be 2,500 acres. This would lead to a maximum of 5,000 pounds of formulation, or 2,500 pounds a.i. used. We anticipate actual use may be much lower, depending on weather.

(ii) Benton, Franklin, and Walla Walla Counties.

(ii: Ground rigs with 40-100 gallons of water/acre, or air.

(iv) ıpplications should begin at 5% - 10% of the bloom, betw· ı June 15 and September 15, depending on the planting dat· The preharvest interval should be 17 days.

(v) ınnery waste is customarily fed to livestock. For th: eason, we also request temporary action levels be est shed for meat and milk as appropriate. However, if res data are not available to do this, we request this Sec n 18 be granted anyway, as the disease problem is sev· enough that the industry would be willing to refrain fro: eeding treated crop residue.

(vi) ;ASF has informed us that a bean registration package with esidue data has already been submitted to EPA.

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6. Economic benefits and losses:

Lima beans is an exceedingly minor crop in Washington, although it is important to individual growers and to two processors.

1. Production costs per acre:

1981	$382
1982	$396
1983	$430
1984	$448
estimated 1985	$466

2.

	Acreage Harvested	Yield/Acre (lb)
1981	620	3078
1982	2,800	3449
1983	3,225	3303
1984	3,270	2984

3.

	Price/ton	Price $/acre	Crop Value
1981	$324	$499	$ 307,400*
1982	$330	$570	$1,597,700
1983	$331	$547	$1,763,000
1984	$326	$486	$1,586,500

* additional processor entered in 1982

4. Data indicate about 50% control on Ronilan treated fields. With currently registered products only, best estimates indicate rejection of about 4% of the harvested crop for mold by the processor, substantial grade reduction due to disease-caused orange staining of the beans, and an unknown amount of crop left unharvested.

The knowledgeable expert is Hollis Kiel, P.O. Box 8, (1164 Dell Avenue), Walla Walla, Washington 99362, phone 09) 525-7890. If you have any questions, please contact me at (5) 753-5064.

Sincerely,

Mary Toohey

Mary Martin Toohey, Chief
Registration & Services
Ag Chemical Division

MMT/lm

cc: Bob Mitchell, Jon Heller, Dick Maxwell, Clarke Brown, Melinda Schluter

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