10-C-78

EEE BRANCH REVIEW

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DATE: IN 9/21/78 OUT 10/6/78 IN _____ OUT _____ IN _____ OUT _____

FISH & WILDLIFE ENVIRONMENTAL CHEMISTRY EFFICACY

FILE OR REG. NO(S). _____

PETITION OR EXP. PERMIT NO. 100-EUP-1 8G2121

DATE DIV. RECEIVED 9/5/78

DATE OF SUBMISSION _____

DATE SUBMISSION ACCEPTED _____

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

DATE ACCESSION NO(S). _____

PRODUCT MGR. NO(S). 21 Wilson/Jacoby

PRODUCT NAME(S) Ridomil 2E

COMPANY NAME Ciba Geigy Corp

SUBMISSION PURPOSE EUP and Petition to test product efficacy on Potato late blight

CHEMICAL & FORMULATION N-(2,6-dimethylphenyl) -N-(methoxyacetyl)-alanine methyl ester 25.02%

Inerts 74.08%

100.0 Pesticide Use:

Ridomil 2E will be used alone or in combination with other registered fungicides to control both late blight tuber rot and foliar blight. The product is claimed to have both protective and curative activity against potato late blight. It is requested that Ridomil 2E be allowed to be used as a tank mix with Brovd 6F, Difolatan 4F, Dithane M.45 (Manzate 200) for the control of early blight and late blight.

100.1 Application methods/Directions:

Late Blight: Apply Ridomil 2E alone at 1/2 to 1 1/2 pts. per acre.

Begin applications when plants are 6 inches high or when disease threatens; repeat at 14-17 day intervals throughout the season. Under severe disease conditions, use 1 to 1 1/2 pts. per acre on a 14-day spray schedule.

Tank mix for both Early blight and Late Blight
Ridomil should be used in tank mixtures with other fungicides for the control of both early blight and late blight. When plants are 6 inches high or when early blight first appears use a tank mix of Ridomil 2E at 1/4 to 1/2 pt. per acre with labeled rates of Bravo 6F, Difolatan 4F, Dithane M-45, or Manzate 200. Treat at 7-10 day intervals as directed on these labels. Under severe disease conditions, use the higher dosages and the 7-day spray schedule.

Note: Do not apply Ridomil 2E within seven days of harvest.

When using tank mixes, observe all limitations, precautions, and rate recommendations which appear on the labels of these products.

100.2 Application Rates:

Alone to control late blight
Ridomil 2E will be applied at a rate of 0.5 to 1.5 pts per acre on .125 to.375 lb. a.i./acre

As a tank mix
Ridomil 2E will be applied at a rate of .25 to .5 pt./acre or .06 to .5 lb a.i./acre.

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100.3 Precautionary Labeling:

Environmental Hazards

Keep out of lakes, streams, or ponds. Apply as specified on this label. Do not apply when weather conditions favor drift from treated areas. Do not contaminate water by cleaning of equiptment or disposal of wastes.

100.4 Proposed EUP Program:

100.4.1 Objectives

The objectives of the testing program are four-fold.

1) To gather large plot data to support the full registration of Ridomil 2E on potatoes.

2) To gather large plot data to support the full registration of Ridomil 2E & Dithane M-45, Ridomil 2E & Bravo, and Ridomil 2E & Difolatan tank mixtures, for early blight and late blight control in potatoes.

3) To gather data from plots where Ridomil 2E was applied by commercial ground and aerial application equipment. (The type of data to be collected is not specified).

4) To provide university cooperators and Ciba-Geigy personnel with additional experience with the use of Ridomil 2E.

100.4.2 Duration/Date/Amount Shipped.

Ciba-Geigy has requested a two year testing period starting January 30, 1979 through January 30, 1981. The tests involve using 772.0 lbs a.i. each year over an area of 670 acres throughout twenty five states that grow potatoes. In all 1544 lbs. a.i. will be utilized in the testing areas.

100.4.3 Application Procedures

The product will be applied alone and as a tank mix both by ground and air equipment. The time interval between applications and the rates of

application will be varied by the investigators to determine the most efficacious manner to apply the product.

100.4.4 Target Pests

The product is claimed to have both protective and curative activity against potato late blight Phytophthora infestans.

100.4.5 Geographical Site Features:

The testing program has been requested for [illegible]. It can be assumed that each area is unique thus it would be impossible to identify any particular features that may create problems.

100.4.6 Test Program Descriptions/Features:

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Ridomil 2E will be applied alone and in conjunction with (tank mixture) three other chemicals at various application rates using various time intervals between applications.

Ridomil will be applied alone at 0.125 to 0.375 lbs ai/A on a schedule varying from 14-17 days. As a tank mix with Dithane M-45, the application rates for Ridomil 2E will be 0.062 - 0.125 lbs. ai/A. with Dithane M-45, at 0.8 - 1.6 lbs. ai/A. Used with Bravo as a tank mix - application rates for Ridomil 2E will be 0.062 - 0.125 lbs. ai/A with Bravo at 0.75 - 1.12 lbs. ai/A. Difolatan is the third tank mix to be used; the rates for this will be Ridomil 0.062 - 0.125 lbs ai/A with difolatan at 0.75 - 1.5 lbs ai/A. All tank mixes will be applied at 7-10 day intervals with treatments being replicated one to three times. Application of the pesticides will be made by both aerial and ground commercial application equipment.

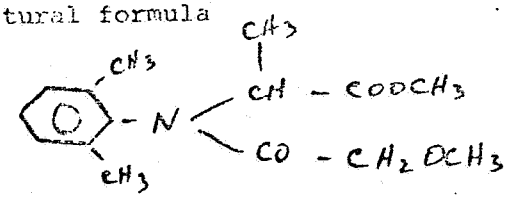
101.0 Chemical and Physical Properties

101.1 N -(2,6-Dimethylphenyl)- N -(methoxyacetyl) -alanine methyl ester

101.2 Common name

None Assigned

101.3 Structural formula



101.4 Molecular weight

279.34

101.5 Physical state

Crystalline
Color: white to beige
Odor: odorless

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101.6 Solubility

Water	0.7%
Methanol	65%
Benzene	55%
Hexane	0.9%
Isopropanol	27%
Methylene Chloride	75%

102.0 Behavior in the environment

Hydrolysis Rate

Temperature	pH	half-life (days)
20°C	1	>200
	9	115
	10	12
50°C	5	>200
	7	>200

103.0 Toxicological Properties

The following table included all known toxicological data to date. For further information regarding a specific study see the study evaluation sheet in the appendix.

TABLE 1

Organism	Test	Results(95% CI)	Active	Data Review #	Validat: Categor:
rats	acute oral LD_{50}	669 mg/kg	Tech.	-	-
mice	"	788 mg/kg	"	-	-
rabbits	"	697 mg/kg	"	-	-
rat	acute dermal LC_{50}	>6000 mg/kg	"	-	-
rabbit	"	>3100 mg/kg	"	-	-
mallard duck	acute oral LD_{50}	1,466 (1128-1906)mg/kg	Tech.	ES-C-1	Core
Japanese quail	"	923 (798-1069) mg/kg	Tech.	ES-C-2	Inva
Bobwhite quail	8-day dietary LC_{50}	>10,000 ppm	Tech.	ES-D-1	Core
Japanese quail	"		"	ES-D-2	Supp
mallard duck	"	"	"	ES-E-1	Core
Rainbow Trout	96-hr. LC_{50}	>100 ppm	Tech.	ES-G-1	Supp
Bluegill	"	>100 ppm	"	ES-F-1	Supp
Catfish	"	>100 ppm	"	"	Supp
Carp	"	>100 ppm	"	"	"
Guppy	"	>100 ppm	"	"	"
Daphnia magna	48-hr. LC_{50}	29.3 (21.6-38.9) ppm	Tech.	ES-H-1	Supp

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104.0 Hazard Assessment

104.1 Discussion

104.1.1 Environmental Concentrations/Estimated residues

Figuring on a worst case basis - using the maximum application rate, the following residues are estimated on the various substrates immediatly after one application of .375 lb. ai./acre.

Substrate	Estimated residue (ppm)
Leaves and Leafy crops	46.87 ppm
Water (6")	.275 ppm
Soil (Top 0.1")	8.25 ppm

Using the Hitch formula for determining residue over a period of time, (Initial residue)x(0.5) Period in question/1/2 life, an estimated residue was determined using 200 days as a 1/2 life and assuming a four month period with the material being applied ever 7 days. The estimated residue for leaves and leafy crops and soil are 629 ppm and 110 ppm respectively. These rates are not expected to cause problems with terrestrial fauna.

104.1.2 Likelihood of exposure to non-target organisms

Dietary and dermal exposure to birds and mammals is likely however at rate compared to the LC_{50} and LD_{50} ranges is very small. A hazard is not anticipated for terrestrial fauna.

Application to aquatic areas was not requested. The likelihood of the pesticide entering the aquatic environment is unknown. Leaching-soil movement rates and other environmental chemistry information is needed to predict exposures in this area. Even if directly applied at .3 lb/acre over 6" of water (a one-time direct application), the concentration would not reach the LC_{50} value for Daphnia.

104.1.3 Endangered species considerations

Due to the level of toxicant expected in the environment and considering the LD_{50} and LC_{50} of test animals, a hazard to endangered species is not anticipated.

104.1.4 Adequacy of toxicity data

The following studies are adequate to support registration:

Species	Test
Mallard duck	Acute oral LD_{50}
Bobwhite quail	8 - day dietary LC_{50}
Mallard duck	8 - day dietary LC_{50}

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107.0 Conclusions

The Ecological Effects Branch does not anticipate a hazard to fish and wildlife during the proposed EUP program if conducted as presented.

107.4 Data adequacy

The following data has been evaluated and found adequate to support registration of the product.

1. Acute Oral LD_{50} - Mallard duck - CGA 48988 Technical-Final Report. Project No. 108-149 dated Nov. 3, 1977.

2. Eight day dietary LC_{50} - Bobwhite quail, CGA 48988 Technical, Final Report. Project No. 108-147 dated Nov. 10, 1977

3. Eight day dietary LC_{50} - Mallard duck - CGA 48988 Technical, Final report. Project No. 108-148 dated Nov. 3, 1977.

The following studies have been reviewed and have been determined to be unacceptable to support registration for the reason listed.

1) "8-day feeding toxicity" in the Japanese quail of technical CGA 48988., Proj. No. Siss 5388, dated Sept. 8, 1976. Japanese Quail is not an acceptable test species.

2) Acute toxicity to rainbow trout, carp, catfish, bluegill and guppy of technical CGA 48988.

Project # Siss 5388, dated Sept. 21 1976. The following aspects of the test protocol are unacceptable.

a) Loading factor was excessive (all tests).

b) An LC_{50} value was not established and/or testing was not conducted to 300 ppm (all tests).

c) Test vessels were aerated (trout).

d) Test species not native (carp, guppy).

e) Tests conducted at lower than normal temperatures or over a fluctuating temperature range (all).

f) Numbers of fish tested/numbers of concentrations not adequate (carp, catfish, bluegill).

3) Acute toxicity of CGA-48988 technical to the water flea (Daphnia magna), by EG&G, Bionomics, dated Oct. 1977. Study is not acceptable primarily for statistical reasons. The major problems are 1, one, data from two separate tests were combined and two, the X^2 value indicates test values to be significantly heterogeneous.

4) Acute oral LD_{50} in the Japanese quail of Technical CGA 48988, Project No. Siss 5388, dated Aug. 18, 1976. Japanese quail is not an acceptable test species.

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107.5 Data requests:

1. Fish acute 96-hr. LC_{50} studies for one species of warmwater (preferably bluegill sunfish) and one species of coldwater (preferably rainbow trout) fish.

2. An aquatic invertebrate acute 48-hr. LC_{50} study (preferably for Daphnia magna).

John Tice
Ecological Effects, Section II

Richard Tucker
Ecological Effects Section Head (Acting)

Clayton Bushong
Ecological Effects Branch Chief (Acting)

September 8, 1978

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