9-6-83

SHAUGHNESSEY NO. REVIEW NO.

EEB BRANCH REVIEW

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RD ACTION CODE/TYPE OF REVIEW 335/Amendment

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

DATA ACCESSION NO(S).

PRODUCT MANAGER NO. H. Jacoby (21)

PRODUCT NAME(S) Ridomil 2E

COMPANY NAME Ciba Geigy Corporation

SUBMISSION PURPOSE Proposed conditional registration of legume vegetables use

SHAUGHNESSEY NO.	CHEMICAL, & FORMULATION	% A.I.

1

Metalaxyl (Ridomil®)

100 Pesticide Label Information

100.1 Pesticide Use

Fungicide to control the Oomycete class of fungi on legume vegetables.

100.2 Formulation Information

A.I. N-(2,6-dimethylphenyl)-N-(methoxyacetyl) alanine methyl ester 25.11%
Inert Ingredients 74.89%

Ridomil 2E contains 2 lb. active ingredient (metalaxyl) per gallon.

100.3 Application Methods, Direction, Rates

Pythium Damping Off and Root Rot:

Ridomil 2E applied at seeding will control damping off and root rot caused by Pythium sp. Applications can be made in the seed furrow or banded at planting.

Application:: Apply 2 lbs. ai/A (0.25 lbs. ai Ridomil per 13,000 linear feet of row) as an in-furrow or banded application at the time of planting.

Note: Soil application of Ridomil will provide early season control of downy mildew.

100.4 Target Organisms

Pythium sp. fungi

100.5 Precautionary Labeling

Environemental Hazards

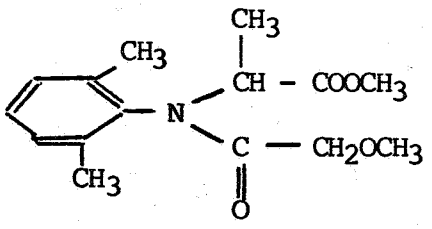
Do not apply directly to water. Apply only as specified on this label.
Do not apply when weather conditions favor drift from treated areas.
Do not contaminate water by cleaning of equipment or disposal of wastes.

101 Physical and Chemical Properties

101.1 Chemical Name

N-(2, 6-dimethylphenyl)-N-(methoxyacetyl) alanine methylester

101.2 Structural Formula



101.7 Solubility

(Temperature unknown)

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

102 Behavior in the Environment

Refer to Registration Standard, December 1981, for more details.

102.1 Soil

Metalaxyl is stable to soil surface hydrolysis under normal environmental conditions. Under aerobic conditions, the half-life in soil is about 7 weeks. The only degradation product is CGA-62826 which degrades to non-extractable material and Co_2. Under anaerobic conditions the half-life is about 9 weeks. Soil microbes contribute to the degradation process. Under field conditions the half-life is about 2 weeks.

Metalaxyl leaches readily in sandy soils low in organic content. Leaching decreases as the organic matter content in the soil increases. Soil adsorption is minor.

102.2 Water

Metalaxyl appears to be resistant to hydrolysis under "normal" environmental conditions (pH, temperature). Under test conditions at pH 5, 7 and 9 and at 20-30°C the half-life is greater than 4 weeks.

The chemical photodegrades in water; the half-life is one week

Ground water contamination is possible because of metalaxyl's strong potential to leach in sandy soils.

102.3 Plant

Metalaxyl is a systemic fungicide having a specific mode of action for control of the Oomycete class of fungi.

The rotational crop data support a rotational crop restriction of one application per season.

102.4 Animal

Exposure of fish to the parent compound or soil aged residues will not result in accumulation values above 10 X in the whole fish. Metalaxyl readily depurates within 14 days.

103 Toxicological Properties

From Registration Standard, December 1981. (A summary from previous review by A. Stavola, 1/20/83)

103.1 References from Toxicology Branch

Organism	Test	Result
Rat	Oral LD_{50}	669 mg/kg
Rabbit	Dermal LD_{50}	>6000 mg/kg
Rat	Dermal LD_{50}	>3170 mg/kg
Rat	90-day dietary	NOEL = 250 ppm
Rat	3-generation reproduction	NOEL = 1250 ppm for reproductive and teratologic parameters.

103.2 Minimum Requirements

Organism	Test	Result
Mallard	A.O. LD_{50}	1466 mg/kg
Mallard	Dietary	>10000 ppm
Bobwhite	Dietary	>10000 ppm
Rainbow trout	96-h LC_{50}	>100 ppm
Bluegill	96-h LC_{50}	>100 ppm
Daphnia magna	48-h LC_{50}	28 ppm

All the above studies were conducted with technical metalaXyl and are core. The following studies were conducted with formulated EC metalaxyl (27.9% A.I.).

Daphnia magna	48-h LC_{50}	12.5 ppm
Bluegill	96-h LC_{50}	27 ppm
Rainbow trout	96-h LC_{50}	18.4 ppm

103.3 Additional Aquatic Studies

Organism	Study	Test Chemical	Result
Daphnia magna	life-cycle	Tech., 90.1% A.I.	minimum threshold conc. between 1.2 and 2.7 mg/l
Sheepshead minnow	embryo-larvae	Tech., 90.1% A.I.	minimum threshold conc. to eggs and fry >9.1 mg/l

104 Hazard Assessment

104.1 Discussion

Ridomil 2E is currently registered for control of blue mold and black shank of tobacco; Phytophthora foot rot and root rot of non-bearing citrus; Phytophthora root rot of conifers and avocados, downy mildew of cucumbers, melons and onions, and late blight of potatoes and tomatoes. Proposed additional use is soil application of Ridomil for control of dampinng off and root rot in legume vetetables. Ridomil will be aplied at rate of 2 lbs ai/A as an in-furrow or banded application at the time of planting. The new use would increase 320,000 acres to the already registered uses. Toxicological data show that Ridomil is slightly or non-toxic to avian species tested (A.O. LD_{50} = 1466 mg/kg; dietary LC_{50}'s are both >10,000 ppm), practically non-toxic to all fish species tested (both LC_{50}'s >100 ppm), but slightly toxic to daphnia (LC_{50} = 20 ppm) and rat (AO LD_{50} 669 mg/kg). Highest expected residues of this pesticide on leaves and leafy crops is 250 ppm (at application rate of 2 lbs a.i./A) are far below 1/5 of avian LD_{50} or LC_{50}'s. This foliage residue level is also far less than 1/5 of expected dietary toxicity value of 6690 ppm (669 ppm (rat LD_{50}) $\div$ 0.1 (i.e. 10%) = 6690 ppm, based on a food consumption of 10% of the body weight) and a possible acute hazard to mammals is not expected. Possible concentration of this pesticide in the 6-inch body of water, with the inadvertent direct application at the maximum rate, will be 1.471 ppm and far less than 1/10 of aquatic LC_{50}'s. For chronic effect, using a conservative scenario (one acre field into one acre 6" pond with 5% runoff, drift, leaching, etc.) for estimation of the environmental concentration (i.e. 2 lb AI. X 0.05 = 0.1 lb A.I./A), a more realistic concentration of 0.0734 ppm could be expected. This concentration is also far less than minimum threshold concentration of daphnia life-cycle study (between 1.2 and 2.7 ppm) and seepshead minow embryo-larvae study (> 9.1 ppm). Therefore, possible hazard to aquatic species is unlikely with the proposed uses.

104.3 Endangered Species

Based on available toxicological data, no acute hazards are expected.

105. Conclusions

105.1 Environmental Hazards Labeling

The label for Ridomil 2E should be amended to read:

"Do not apply directly to water or wetlands. Do not contaminate water by cleaning of equipment or disposal of wastes. Cover or incorporate spills."

105.2 Recommendations

The Ecological Effects Branch has completed a full risk assessment [3(c)(5) finding] of the proposed registration of Ridomil 2E for use on beans. Based upon the available data and use information EEB concludes that the proposed use provides for minimal hazards to nontarget organisms.

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