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Date Out EFB:

25 JUN 1984

TO: Hank Jacoby
Product Manager 21
Registration Division
TS-767

FROM: Samuel M. Creeger, Chief
Review Section No. 1
Exposure Assessment Branch
Hazard Evaluation Division

Attached please find the environmental fate review of:

Reg./File No.: 100-EUP-69

Chemical: CGA-64250

Type Product: Fungicide

Product Name: Tilt

Company Name: CIBA-Geigy

Submission Purpose: Application for experimental use permit on rice, wheat, barley and rye.

ZBB Code: Other

Date in: 4/18/84

Date Completed: 6/21/84

ACTION CODE: 736

EFB # 4296

TAIS (level II)	Days
60	6.5

Deferrals To:

_____ Ecological Effects Branch

_____ Residue Chemistry Branch

_____ Toxicology Branch

1.0 INTRODUCTION

CIBA-Geigy has submitted a request for an experimental use permit (EUP) for Tilt Fungicide (CGA-64250, as a. i.) to evaluate control of certain diseases on rice, wheat, barley and rye.

The experimental program calls for a one year EUP for testing a total of 3700.8 lbs a.i. on rice (4,000 A), wheat (16,875 A), barley (2,175 A), and Rye (200 A) in 10-20 acre plots in 43 different states of the U. S.

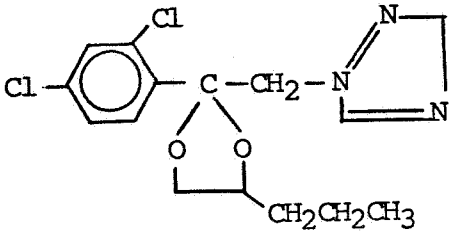
EAB previously reviewed applications for registration of Tilt for use on pecans (2/10/84), turf (12/16/82), grasses grown for seed (6/17/81) and for an EUP for evaluating its use on rice and pecans (2/25/82). In the review for the EUP on rice and pecans, EAB concluded that data were available to support testing under the experimental program. For that EUP, the directions called for aerial application of 0.28 lb ai/A per application with 1 to 3 applications permitted.

1.1 Chemical

Common name/Code name: CGA-64250

Chemical name: 1-[[2-(2,4-dichlorophenyl)-4-propyl-1,2-dioxolan-2-yl]-methyl]-1H-1,2,4-triazole

Chemical structure:



Formulation contains 3.6 lbs ai/gallon

2.0 DIRECTIONS FOR USE

The complete label is appended to this review.

Briefly:

Wheat, Barely Rye: Apply 4 fl. oz. per acre (0.11 lb ai/A) with ground equipment or by air. Make only one application per season. [The greatest yields are obtained when Tilt is applied at time of flag leaf emergence (growth stage 8)].

Rice: Apply 6 fl. oz. per acre (0.17 lb ai/A) at time of first internode elongation and repeat at time of booting before the boot splits and head emerges, or add 8-10 fl. oz. per acre (0.22 - 0.28 lb ai/A) at internode elongation. If disease reappears use another registered fungicide for the second application. Do not apply to stubble or ratoon crop rice. Do not use water drained from treated fields to irrigate other crops.

Rotational Crop Restriction

To avoid possible illegal residues 1) Do not double-crop treated acreage where Tilt is applied to the first crop. 2) Do not graze or feed forage, fodder or straw from rotational crops planted in the fall or the spring following treatment.

3.0 DISCUSSION OF DATA

3.1 CIBA-Geigy has previously submitted data which support the use of Tilt under the experimental program. The data indicate that Tilt: 1)is stable to hydrolysis, 2) degrades in soil under anaerobic (half-life calculated to be 10 weeks) and under sterile/aerobic conditions, 3) has bioaccumulation of 24X in bluegill sunfish muscle. However, depuration of residues is almost complete in 14 days.

3.2 In review dated 2/25/82, the registrant reported that the catfish bioaccumulation factor was 15X in whole fish. EAB requested the study be submitted for review. It could possibly substitute for a field catfish study where catfish farming occurs in harvested rice paddies treated the previous year with Tilt. The study was submitted in EPA Accession No. 072222. It should be reviewed when registration of the rice use is requested.

3.3 Numerous rotational crop studies have been previously submitted and are currently under outside contractor review. Certain studies will be briefly reviewed here in support of the current EUP application. However, final acceptance of these studies to support registration will depend on the completed outside review.

Note: This reviewer found the field rotational crop studies as submitted exceedingly difficult to review. The registrant should have compiled the results of the various crops (grown in one location), the various analyses (of the same crop), the preliminary reports and follow up reports into one complete study report before submitting it for review. Prevously reviewed field dissipation studies suffer the same problem.

3.3.1 Soil Uptake of Phenyl ^{14}C vs Triazole ^{14}C-CGA 64250 in Target Peanuts Followed by Rotational Winter Wheat and Corn-A Side by Side Comparison Study in the Greenhouse. Madrid, S. O. and J. E. Cassidy. June 20, 1983 CIBA-Geigy Report ABR-83030.

Procedure

Georgia sandy loam soil (78% sand, 18% silt, 4% clay, 2.6 Organic matter, pH =6.3, CEC= 6.8 meq/100gm) was treated with phenyl-^{14}C- and triazole-^{14}C-CGA-64250 at a rate equivalent to 1.5 lb a.i./A in the top 2 inch soil layer of 12 quart buckets. Peanuts were planted and grown to maturity. After peanut harvest, winter wheat and corn were planted as rotational crops and grown to maturity.

A 8 inch soil core sample was taken at peanut planting and at all subsequent plant samplings. The core was separated into 0-3, 3-6 and 6-8 inch sections.

Total ^{14}C in homogenized plant parts was determined by combustion of soil (Method AG-223). Soil was extracted with methanol:water (Method AG-351). Plant homogenate was further separated into aqueous and organic fractions. Homogenate was further serially digested by Kjeldahl, 60% sulfuric acid then 12N HNO_3 digestion. Analysis of extracted ^{14}C was by TLC.

Study schedule:

Date	Days after application	Action
11/16/81	0	^{14}C applied; peanuts planted
4/16/82	151	Peanuts harvested; soil sampled; corn, wheat planted
7/26/82	252	corn harvested; soil sampled
9/2/82	290	winter wheat harvested; soil sampled

Results

The authors report that ^{14}C-CGA-64250 translocated to the corn and winter wheat when planted as rotational crops in soil treated 151 days earlier with CGA-64250.

PPM ^{14}C levels

Plant part	Phenyl-^{14}C	Triazole-^{14}C
Winter wheat		
husk	0.26	1.93
grain	0.99	1.58
straw	0.4	1.0
Corn		
stalk	0.54	0.89
cob	0.07	0.10
kernels	0.01	0.34

In soil, the authors report that in the 0-3 inch soil core, ^{14}C residues declined slightly:

PPM Residues in Soil

Day	Triazole-^{14}C	Phenyl-^{14}C
0	1.93	1.12
210	1.09	0.95

Small amounts of ^{14}C leached to the 3-6 inch and 6-8 inch layers by 290 days. Extractable ^{14}C decreased with time while non-extractable ^{14}C residues increased with time.

Conclusion

EAB concludes this study is inadequate as a confined rotational crop study. A typical leafy green or root crop was not included. Also, it would have been more appropriate to have applied the ^{14}C-CGA-64250 to a growing plant (post-emergent) as the label directs.

However, data do show that residues can accumulate in small grains when planted as rotational crops in soil treated 151 days earlier with CGA-64250.

Note: The analytical methods referenced here are not reviewed at this time. Final acceptance of this study (including identity of extractable residues from plants and soil and referenced analytical methods) will will be made pending complete outside review of the rotational crop studies.

3.3.2 While no typical leafy green or root crop was included in the confined rotational crop study, such crops were used in other field studies:

- Lettuce (immature and mature), when planted in a Nebraska silt loam soil treated 11 months earlier with 100 or 200 gm ai/A CGA-64250 contained <0.05 ppm residues CGA-64250 equivalents (detectable as parent CGA-64250 or 2,4-dichlorobenzoic acid (DCBA) methyl ester). However, 0.93 and 1.6 ppm residues of CGA-64250 equivalents (detected as 3,5-dibromo-1,2,4-triazole) were found in the mature lettuce grown in the 100 gm and 200 gm ai/A treated soil, respectively. (Note: 0.68 ppm residues of CGA-64250 equivalents were reported in lettuce grown in control/untreated soil).

- Sugar beets, when planted in the same Nebraska silt loam soil treated 8 1/2 months earlier with 100 and 200 gm ai/A CGA-64250, contained <0.05 ppm residues of CGA-64250 equivalents (detectable as parent CGA-64250 or DCBA methyl ester) in immature forage and mature roots or tops. However, residues ranging from 0.40 to 0.57 ppm CGA-64250 equivalents (detected as 3,5-dibromo-1,2,4-triazole) were found in immature forage and mature roots and tops.

Note: Other field rotational crop studies submitted showed that residues detected as 3,5-dibromo-1,2,4-triazole) also accumulated in winter wheat and corn when planted as typical grain crops in soil treated 2 months earlier with CGA-64250.

Conclusion

The results of these studies are brought into question since it appears that in this study (and the other field rotational crop studies) that samples were stored for extended lengths of time before analysis (over 7 months in the Nebraska study, above and longer in others). However, the data show that residues are taken up by leafy green and root crops when planted in soil treated 11 and 8 1/2 months earlier with Tilt.

Storage stability data will be necesssary to support these studies when registration is requested. Final acceptance of these studies are pending on the completed outside review of the studies.

Also, as noted earlier, this reviewer found it exceedingly difficult to review these studies since they are so unorganized.

4.0 EXECUTIVE SUMMARY

Adequate data are available to support the use of Tilt under the proposed experimental program provided the rotational crop restriction is revised to prohibit the planting of rotational crops unless crops are destroyed or used for research purposes.

The registrant should be informed that storage stability data must be submitted to support the numerous field rotational crop studies already submitted when registration for the proposed EUP use is requested. A summary review of these studies indicate that samples were stored for extended lengths of time before analysis.

However, final acceptance of the rotational crop studies briefly reviewed here and the other data previously submitted are pending the completed outside EAB review. Final EAB review may note additional data or information gaps which may require that additional data or information be submitted to support registration of Tilt for future proposed uses.

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Exposure Assessment Branch
Hazard Evaluation Division

TILT CGA-64250 Reviews

The next 10 page(s) is/are not included in this copy of the TILT reviews.

The material not included contains the following type of information:

___ Identity of product inert ingredients

___ Identity of product impurities

___ Description of the product manufacturing process

___ Description of product quality control procedures

___ Identity of the source of product ingredients

___ Sales or other commerical/financial information

✓ A draft product label

___ The product confidential statement of formula

___ Information about a pending registration action

___ Detailed methods and results of a registrant submission.

___ Duplicate pages.

The information not included generally is considered confidential by product registrants. If you wish to obtain the information deleted, please contact the individual who prepared this response to your request.
