

US EPA ARCHIVE DOCUMENT

DATA EVALUATION RECORD
Predatory Mite - Acute Contact and Reproduction Tests
No OPP Guideline Applicable

1. **CHEMICAL:** Thidiazuron PC Code No.: 120301

2. **TEST MATERIAL:** AE B049537 00 SC42 A204 Purity: 41.9%

3. **CITATION:**

Author: Waltersdorfer, A.

Title: Toxicity to the predatory mite *Typhlodromus pyri* Scheuten (Acari, Phytoseiidae) in the laboratory, Thidiazuron, Water miscible suspension concentrate 500 g/L

Study Completion Date: August 7, 2002

Laboratory: Bayer CropScience GmbH, Ecotoxicology
Industriepark Hochst
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Federal Republic of Germany

Sponsor: Bayer CropScience GmbH, Ecotoxicology
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Federal Republic of Germany

Laboratory Report ID: CW02/009

DP Barcode: D294536

MRID No.: 46203521

4. **REVIEWED BY:** Rebecca Bryan, Staff Scientist, Dynamac Corporation

Signature:

Date: 5/3/04

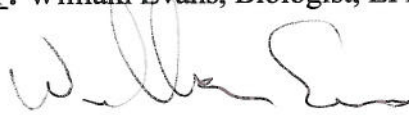
APPROVED BY: Teri Myers, Ph.D., Staff Scientist, Dynamac Corporation

Signature:

Date: 5/3/04

5. **APPROVED BY:** William Evans, Biologist, EFED/ERB-1

Signature:



Date: 11/06/04



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6. STUDY PARAMETERS:

Scientific Name of Test Organism: *Typhlodromus pyri*

Age and Size of Test Organism: Protonymphs

Definitive Study Duration: 14 days total (7 day hour mortality phase and 7 day reproduction phase)

Type of Concentration: Nominal

7. CONCLUSIONS:

The predatory mite, *Typhlodromus pyri*, was exposed to Thidiazuron for 14 days at a concentration of 200 g a.i./ha. After 7 and 14 days, percent mortality was 2% in the control and 200 g a.i./ha treatment group. After 7 days, 4% of the mites were missing in the 200 g a.i./ha treatment group and 5% were missing in the control. After 14 days, 6% of the mites were missing in the 200 g a.i./ha treatment group and 11% were missing in the control. The percent mortality-escaping rate for the control was 7.0% and the corrected percent escaping rate was -1.1% for the 200 g a.i./ha treatment group. After 14 days, the mean number of eggs per female was 9.32 in the control and 8.99 in the 200 g a.i./ha treatment group. No differences for reproduction or mortality were statistically significant.

This study is scientifically sound, however, the study is a non-guideline study and does not fulfill an OPP guideline requirement. **The study is classified as Supplemental.**

LC₅₀: >200 g a.i./ha 95% C.I.: N/A
NOEC: 200 g a.i./ha Probit Slope: N/A
LOEC: >200 g a.i./ha

8. ADEQUACY OF THE STUDY:

A. Classification: Supplemental

B. Rationale: This study is scientifically sound, however it is a non-guideline study and does not fulfill an OPP guideline requirement.

C. Repairability: N/A

9. GUIDELINE DEVIATIONS:

This study is not an Office of Pesticides (OPP) guideline study and a protocol has not been developed by OPP.

10. SUBMISSION PURPOSE:

This study was submitted to provide supplemental data on the toxicity of the Thidiazuron to predatory mites on an acute contact and reproduction basis for the purposes of chemical reregistration.

11. MATERIALS AND METHODS:**A. Test Organisms**

Criteria	Reported Information
Species:	<i>Typhlodromus pyri</i>
Age at beginning of test:	Protonymphs
Supplier:	Laboratory colonies.
All wasps from same source?	Yes

B. Test System

Guideline Criteria	Reported Information
Cage size adequate?	The test units were round cover glasses (45 mm diameter and 0.1 mm thick) floating in glass petri dish bottoms with an outer diameter of 54 mm and an orifice in the middle (6 mm diameter). Six petri dishes were arranged in a stainless steel tray. See Figure 1, p.24.
Lighting:	16 hour light/8 hour dark
Temperature:	23.5-26.0°C
Relative humidity:	63-78% (short decline to 47%)

C. Test Design

Guideline Criteria	Reported Information
Reference toxicant test?	Reference toxicant test was performed using Dimethoate at 2.5 g a.i./ha.
Method of administration:	The test solutions were applied to the test cover glasses using a sprayer. The mites were added after the spray coating had dried.
Nominal doses:	200 g a.i./ha
Controls: Negative control and/or diluent/solvent control	Negative control (deionized water)
Number of replicates:	5 replicates; 20 mites/replicate
Feeding:	Pollen (birch-pine mixture)
Observation period:	14 days total (7 day hour mortality phase and 7 day reproduction phase)
Reproduction effects method:	After mortality phase, a sex ratio of 5 females:1 male was maintained in each replicate. The number of eggs and juveniles were counted and removed on days 7, 10, and 12.

12. REPORTED RESULTS:

Guideline Criteria	Reported Information
Quality assurance and GLP compliance statements were included in the report?	A GLP statement was provided; however, this study was not conducted in accordance with 40 CFR 160, Good Laboratory Practices.
Control performance:	2% control mortality after 14 days.
Raw data included:	Replicate data was provided.

Guideline Criteria	Reported Information
Signs of toxicity (if any) were described?	The reproduction effects included the number of eggs per female.

Table 1: Mortality Effects

Dosage, g a.i./ha	No. of mites	Percent Mortality (%)		
		Day of Study		
		1	7	14
Test Substance (Thidiazuron):				
Negative Control	100	0	2	2
200	100	0	2	2
Toxic Standard (Dimethoate):				
2.5	100	36	55	59

Table 2: Reproduction Effects

Dosage, g a.i./ha	14 days after exposure				Number of eggs per female (Mean ± stan.dev.)
	Females	Males	Eggs	Larvae	
Negative Control	54	33	108	0	9.32 ± 0.68
200	57	35	117	0	8.99 ± 0.47

Observations:

After 7 and 14 days, percent mortality was 2% in the control and 200 g a.i./ha treatment group. After 7 days, 4% of the mites were missing in the 200 g a.i./ha treatment group and 5% were missing in the control. After 14 days, 6% of the mites were missing in the 200 g a.i./ha treatment group and 11% were missing in the control. The percent mortality-escaping rate for the control was 7.0% and the corrected percent escaping rate was -1.1% for the 200 g a.i./ha treatment group. After 14 days, the mean number of eggs per female was 9.32 in the control and 8.99 in the 200 g a.i./ha treatment group.

Statistical method: The LD₅₀ values were not calculated due to less than 50% mortality in all treatment groups. The NOEL and LOEL were determined based on mortalities. The

mortalities were corrected according to the formula of Abbott (1925, p. 12). The mortality-escaping rate formulas are found on page 13. The reproduction calculations are found on page 14 and the data was analyzed using a one-way analysis of variance.

13. VERIFICATION OF STATISTICAL RESULTS:

Mortality did not exceed 50% in this study. Reproduction data in the treatment were compared to the control using a t-test. No difference was detected.

LD₅₀: >200 g a.i./ha 95% C.I.: N/A
NOEL: 200 g a.i./ha Probit Slope: N/A
LOEL: >200 g a.i./ha

14. REVIEWER'S COMMENTS:

The reviewer's conclusions were similar to the study authors. There was no effect of treatment with thidiazuron to mortality or reproduction of the predatory mite.

The test was conducted in compliance with the OECD Principles of Good Laboratory Practice, adopted November 26, 1997 [(C97) 186/Final] (p. 3).

After 7 days, the reference substance, dimethoate, had 5% mortality and 22% missing. The corrected percent escaping rate was 17.9% compared to the control.

15. REFERENCES:

- Abbott, W.S. 1925. A method of computing the effectiveness of an insecticide. J. of Econ. Entomol. 18, 265-267.
- Joisten, M. 2000. The 'island method'-a new laboratory test to determine side-effects of plant protection products on the predatory mite *Typhlodromus pyri* Scheuten (Acari, Phytoseiidae). J. Appl. Ent. 124, 267-268.
- Blumel et al.: Laboratory residual contact test with the predatory mite *Typhlodromus pyri* Scheuten (acari, Phytoseiidae) for regulatory testing of plant protection products in: Candolfi, M.P. et al. (eds.): Guidelines to evaluate side-effects of plant protection products to non-target arthropods. IOBC, BART, and EPPO Joint Initiative. IOBC/WPRS publication 2000, 121-143.

The SAS System for Windows, Release 6.12 TS Level 0060, 1989-1996.