



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

JUL 19 1989

SUBJECT: Addendum to the Amitraz Review of June 28, 1989

TO: Dennis Edwards
Product Manager 12
Registration Division (H7505C)

THUR: Henry Jacoby, Acting Chief *Henry Jacoby*
Environmental Fate and Ground Water Branch
Environmental Fate and Effects Division (H75707C)

Paul J. Mastradone, Ph.D., Chief *Paul J. Mastradone*
Environmental Chemistry Review Section #1
Environmental Fate and Effects Branch/EFED (H7507C)

FROM: Herbert L. Manning, Ph.D. *Herbert L. Manning*
Environmental Chemistry Review Section #1
Environmental Fate and Effects Branch/EFED (H7507C)

From the data examined in the June 28 review, the environmental fate assessment of amitraz is characterized by the rapid degradation ($t_{1/2}$ = 20 min to one day) of the parent by hydrolysis, photodegradation (aqueous and on soil), and soil metabolism (aerobic and anaerobic) to yield three major degradates: 2,4-dimethylformanilide (BTS 27919), N-2,4-dimethylphenyl-N'-methylformamidine (BTS 27271), and 2,4-dimethylaniline (BTS 24868). These degradates were mobile in sand, sandy loam, and clay loam soil columns when aged amitraz was applied to them; however, although the residues were distributed throughout the columns, they were mainly in the upper 10 cm (82.7-74.8%). Residues in the leachate (5.2-1.5%) were polar products and were not identified as known degradates. Mobility of two of the degradates (BTS 27271 and BTS 27919) was observed in 0-12 inch soil cores in a field dissipation study. Half-lives for a one application plot were 100 days for BTS 27271 and 130 days for BTS 27919. In a three

application plot, the half-lives were 110 days for BTS 27271, 150 days for BTS 27271 and BTS 27919, and 450 days for total amitraz residues. Mobility in air (lab volatility) was at a level of concern ($>10^{-6}$ mm Hg) for parent (2.6×10^{-6} mm Hg) and degradates (0.2 to 2.6×10^{-5} mm Hg).

Accumulation of total [14 C]residues in bluegill sunfish was 280X for muscle, 2118X for viscera, 1467X for carcass, and 933X for whole fish. Of the total [14 C]residues found, 46% was identified as BTS 27919 and 18% as BTS 27271.

The Amitraz Registration Standard was issued Oct 1987. The data reviewed at that time were inadequate to properly assess the environmental and ground water fate of amitraz for use on pears and apples. All the data for an orchard crop use were required. The primary fate concern of the standard was the potential to leach to ground water, since the leaching data indicated moderate mobility in sandy loam, silt loam, and clay soils and rapid mobility in sandy soils.

The data in the June 28 review partly addresses the ground water concern. The soil column mobility data indicated movement of the residues (degradates) throughout the column, but mainly (83-75%) in the upper 10 cm; the leachate (5.2-1.5%) did not contain known degradates. The field dissipation study sampled soil at 0-4, 4-8, and 8-12 inch depths. Total residues (0.11 ppm) were detected one year after the third application. The residues from the three applications degraded very slowly ($t_{1/2} = 450$ days).

The question of the potential of amitraz and its degradates to leach to ground water still remains unanswered, and the mobility and persistence of the degradates of amitraz indicate that a field dissipation study on representative sites is required. Pending the results of this study, small scale prospective ground water monitoring studies may be required.

In light of the overall fate of amitraz and the Agency's ground water concern, the EFGWB has concluded the following on the submissions in the June 28 review:

1. EUP on cotton- We have concerns with this EUP. The primary reason is the lack of adequate field dissipation data, especially since cotton is grown in sandy type soils that may increase the leachability of amitraz and its residues. A new field dissipation study using several representative sites is needed.

2. EUP on citrus fruit- We have concerns with this EUP, mainly because of the lack of adequate field dissipation data. Here, too, the location of citrus trees in sandy soils would enhance the potential for leaching. A new field dissipation study using several representative sites is needed.

3. Registration on citrus fruit- We have concerns with the registration of amitraz for use on citrus because of the need for a new field dissipation study and field volatility data to adequately assess the fate of amitraz and its degradates, in particular the potential of the degradates to leach into ground water.

4. Response to registration standard- The data listed on p. 6 of the June 28 review will be revised accordingly.

Shaughnessy No.: 106201
Date Out of EAB: JUN 28 1989

To: Dennis Edwards
Product Manager 12
Registration Division (TS-767C)

From: Paul Mastradone, Acting Chief
Environmental Chemistry Review Section #1
Environmental Fate and Ground Water Branch/EFED (TS-769C)

Through: Henry Jacoby, Acting Chief
Environmental Fate and Ground Water Branch/EFED (TS-769C)

Attached, please find the EAB review of . . .

Reg./File # : 45639-EUP-27; 45639-49; 45639-51; 45639-

Chemical Name : Amitraz

Type Product : Insecticide/acaricide

Product Name : Mitac, Tactic

Company Name : Nor-Am Chemical Company

Purpose : Review request for EUPs on cotton/citrus, for registration
on citrus, and studies submitted in response to standard.

Date Received: 8/26; 9/30; 12/14; 12/16/88 Action Code: 756, 330, 660

Date Completed: _____ EFGWB # (s): 90028, 90021,
90216, 80987

Monitoring Study Requested: _____ Total Reviewing time: 22.5 da.

Monitoring Study Volunteered: _____

Deferrals to: _____ Ecological Effects Branch, EFED
_____ Science Integration and Policy Staff, EFED
_____ Non-Dietary Exposure Branch, HED
_____ Dietary Exposure Branch, HED
_____ Toxicology Branch, HED

1. CHEMICAL: Common name:

Amitraz

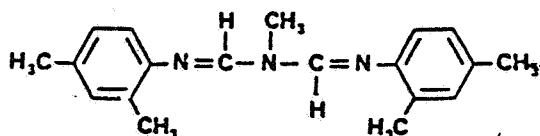
Chemical name:

N,N'-[(Methylimino)dimethylidyne]-di-2,4-xylidine

Trade name(s):

Mitac, Taktic, Triatox

Structure:



Formulations:

50% WP and 1.5 lb/gal EC.

Physical/Chemical properties:

Molecular formula: C₁₉H₂₃N₃.

Molecular weight: 293.4.

Physical state: White crystalline solid.

Melting point: 86-87 C.

Vapor pressure: 2.6 x 10⁻⁶ mm Hg at 25 C

Solubility: c. 1 mg/L water at room temperature; >300 g/L acetone, toluene at room temperature; soluble in common organic solvents; only slightly soluble in water.

2. TEST MATERIAL:

See individual studies.

3. STUDY/ACTION TYPE:

The registrant requests an EUP on cotton and citrus and registration on citrus. Studies were also submitted in response to Registration Standard.

4. STUDY IDENTIFICATION:

Arnold, D.J. and K.L. Barrett. 1988. The adsorption equilibrium of amitraz in sand, sandy loam, clay loam, and clay soils. Laboratory Project ID ENVIR/87/45. Unpublished study prepared by Schering Agrochemicals Limited, Essex, England, and submitted by Nor-Am Chemical Company, Wilmington, DE. (40780515)

Brehm, M. 1987. W85: The photodegradation of amitraz (Schering Code No. ZK 49974) on soil surfaces. Laboratory Project ID# APC 54/87:87/115. Unpublished study prepared by Schering AG, Berlin, Germany, and submitted by Nor-Am Chemical Co., Wilmington, DE. (00407805)

Brehm, M. 1988. W101 Amitraz: The photolysis of amitraz (Schering Code No. ZK 49 974) in aqueous solution. Laboratory Project ID# APC 06/88:87/114. Unpublished study prepared by Schering AG, Berlin, Germany, and submitted by Nor-Am Chemical Co., Wilmington, DE. (40780513)

Campbell, J.K. 1988. W89 Amitraz: The hydrolysis of amitraz in aqueous solution at 25 C under acid neutral and alkaline conditions. Laboratory Project ID ENVIR/88/4. Unpublished study prepared by Schering Agrochemicals Limited, Walden, Essex, England, and submitted by Nor-Am Chemical Co., Wilmington, DE. (40780512)

Fortsch, A. 1988a. (W91) Mobility of N-(2,4-dimethylphenyl)-N-formylamine (BTS 27 919) in the German standard soils 2.1, 2.2 and 2.3. Laboratory Project ID UPSR 6/88 — PA 49 974.7/13. Unpublished study prepared by Schering AG, Berlin, Federal Republic of Germany, and submitted by Nor-Am Chemical Company, Wilmington, DE. (40780516)

Fortsch, A. 1988b. W102 Amitraz: Mobility of N-(2,4-dimethylphenyl)-N-methyl-formamidine (BTS 27 271) in the German standard soils 2.1, 2.2 and 2.3. Laboratory Project ID UPSR 7/88 — PA 49 974.7/13. Unpublished study prepared by Schering AG, Berlin, Federal Republic of Germany, and submitted by Nor-Am Chemical Company, Wilmington, DE. (40780517)

Leake, C.R. 1988a. W103: The "aged" leaching of amitraz in three soil types. Laboratory Project ID ENVIR/88/35. Unpublished study prepared by Schering Agrochemicals Limited, Essex, England, and submitted by Nor-Am Chemical Company, Wilmington, DE. (40931501)

Leake, C.R. 1988b. (W86) The volatilization of [^{14}C]-amitraz from soil under laboratory conditions. Laboratory Project ID ENVIR/88/1. Unpublished study prepared by Schering Agrochemicals Limited, Essex, England, and submitted by Nor-Am Chemical Company, Wilmington, DE. (40780518)

Lines, D. 1981. (W14) The examination of residues of bluegill sunfish (Lepomis macrochirus) exposed to ^{14}C amitraz. Laboratory Project ID METAB/81/36. Unpublished study prepared by Schering Agrochemicals Limited, Essex, England, and submitted by Nor-Am Chemical Company, Wilmington, DE. (40780519)

Manley, J.D. and P.J. Snowdon. 1987. (W80) Residues of amitraz and metabolites in soil following orchard treatment with the 20% EC formulation in Texas, USA, 1983/84. Laboratory Project ID RESID/86/132. Unpublished study prepared by Schering Agrochemicals Limited, Essex, England, and submitted by Nor-Am Chemical Company, Wilmington, DE. (40798004)

Mastone, J.D. and M.E. Barrows. 1981. Accumulation and elimination of ^{14}C residues by bluegill sunfish (Lepomis macrochirus) exposed to ^{14}C -labeled amitraz. METAB/81/11. Report No. BW-80-10-760. Unpublished study prepared by EG & G Bionomics and submitted by Nor-Am Chemical Company, Wilmington, DE. (00072503)

Somerville, L. 1988. (W5 2nd edn) Degradation of [^{14}C]-radiolabeled amitraz in soil under aerobic, anaerobic and sterile conditions. Laboratory Project ID ENVIR/88/28. Unpublished study prepared by Schering Agrochemicals Limited, Essex, England, and submitted by Nor-Am Chemical Company, Wilmington, DE. (40798003)

5. REVIEWED BY:

H. Manning
Microbiologist
EFGWB/EFED/OPP
Review Section #1

Signature: Herbert L. Manning
JUN 28 1989
Date: _____

6. APPROVED BY:

Paul Mastradone
Acting Chief
EFGWB/EFED/OPP
Review Section #1

Signature: Paul Mastradone
JUN 28 1989
Date: _____

7. CONCLUSION:

There are several registration-related actions to be addressed in this review on amitraz:

1. Request for EUP (Experimental Use Permit) for use on cotton,
2. Request for EUP for use on citrus fruit,
3. Request for registration of amitraz for use on citrus, and
4. Response to guidance package on reregistration of amitraz-containing products.

1. Request of EUP on cotton - (45639-EUP-27)

The data requirements for this use and their status as of this review are as follows:

<u>Data Required</u>	<u>Current Status</u>
● Hydrolysis	The study is acceptable.
● Aerobic Soil Metabolism	The study is acceptable.

<u>Data Required</u>	<u>Current Status</u>
● Leaching-Adsorption/Desorption	The batch equilibrium study of unaged amitraz was unacceptable and is required. Aged amitraz on soil column was acceptable.
● Accumulation in Rotational Crops	The data have not been reviewed.
● Accumulation in Laboratory Fish	The data may be acceptable if the location of degradates (fish tissue) is supplied.

EFGWB cannot concur with the request for an EUP on cotton, because we lack acceptable fate data on batch equilibrium data, rotational crop data, and fish accumulation (degrade/fish tissue information).

2. Request for EUP on citrus fruit - (45639-EUP-27)

Essentially the same data are required for the EUP on cotton, with the exception of the rotational crop study that is not required for an orchard crop. Therefore, the data needed for EFGWB to concur with an EUP on citrus is batch equilibrium data, and degrade/fish tissue data on accumulation in bluegill sunfish.

3. Request for registration on citrus fruit -

The data requirements for this use and their status as of this review are as follows:

<u>Data Required</u>	<u>Current Status</u>
● Hydrolysis	The study is acceptable.
● Photodegradation - Soil	The study may be acceptable if sensitivity of method is supplied.
● Aerobic Soil Metabolism	The study is acceptable.
● Leaching-Adsorption/Desorption	The batch equilibrium study on unaged amitraz is unacceptable and is required. The soil column study on aged amitraz is acceptable.

<u>Data Required</u>	<u>Current Status</u>
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- Accumulation in Laboratory Fish The study may be acceptable if degradate/fish tissue data is supplied.
- Laboratory/Field Volatility The laboratory study is acceptable; the field volatility study is a data gap.

EFGWB cannot concur with the request for registration on citrus fruit, because we lack acceptable fate data on soil photolysis, batch equilibrium, accumulation in fish, and field volatility; rotational crop data is not required for an orchard use.

4. Response to guidance package on reregistration of amitraz-containing products -

The data required by the Registration Standard, the registrant responses, and the status of the data as of this review are as follows:

<u>Data Required</u>	<u>Registrant Response</u>
● Hydrolysis	Supplied and is acceptable.
● Photodegradation - Water	Supplied and supplemental, but is not required.
● Photodegradation - Soil	Supplied and may be acceptable if method sensitivity is supplied.
● Aerobic Soil Metabolism	Supplied and is acceptable.
● Anaerobic Soil Metabolism	Supplied and supplemental, but is not required.
● Leaching - Adsorption/Desorption	Supplied; aged amitraz data (soil column) is acceptable; unaged data (batch equilibrium) is unacceptable and is required.
● Field Dissipation	A new field dissipation study is required.
● Accumulation in Laboratory Fish	Supplied; may be acceptable if degradate/fish tissue data is supplied.

- Accumulation in Aquatic Nontarget Organisms Data not supplied.
- Laboratory/Field Volatility Supplied; lab data acceptable, but field data not supplied.

Therefore, while almost all the studies required by the standard were supplied (the accumulation in aquatic nontarget organisms and field volatility studies have not been received), five studies were reviewed as still being required: information on photodegradation on soil, batch equilibrium, a new field dissipation study, field volatility, information on fish accumulation study, and aquatic nontarget organism study.

Hydrolysis (Campbell, 40780512)

This study is acceptable and meets EPA's data requirements for the hydrolysis of amitraz in buffered solutions at pH 5, 7, and 9.

Amitraz, [¹⁴C]-labeled in the phenyl ring (radiochemical purity >95%), was tested at 0.04 or 0.05 ppm in sterile buffer solutions at pH 5, 7, and 9. Degradation occurred in the dark with half-lives at 2.1 hours at pH 5, 22.1 hours at pH 7, and 25.5 hours at pH 9. The degradates were:

2,4-dimethylformanilide (BTS 27919),
2,4-dimethylaniline (BTS 24868), and
N-2,4-dimethylphenyl-N'-methylformamidine (BTS 27271).

The material balance was 82.6-109.4% in the pH 5 solution, 76.6-101.8% in the pH 7 solution, and 78.0-123.4% in the pH 9 solution.

Photodegradation in Water (Brehm, 40780513)

This study is scientifically sound and provides supplemental information on the aqueous photolysis of amitraz. The primary deficiency of the study was that the light source did not simulate sunlight.

Amitraz photodegraded in a buffered, aqueous solution (pH 7, 28 C) with a $t_{1/2}$ = 11.8 hours; the degradates were BTS 27919 and BTS 27271. Although the study is supplemental, it does not have to be repeated since no additional, useful data is likely to be obtained.

Photodegradation on Soil (Brehm, 00407805)

The study is acceptable.

[¹⁴C]Amitraz (ring-labeled, purity >98%) at ca.0.89 lb/A (ca.1 kg/ha) on

sandy loam soil-TLC plate was continuously irradiated for 30 minutes with a Xenon arc lamp at <30 C. Amitraz degraded with a half-life of 20 minutes. The intensity of the light source was calculated at 8.0 mW/cm² as compared to 3.0 mW/cm² for theoretical value for sunlight at 40 C N latitude. The degradates were BTS 27919 and BTS 27271. There were no significant amounts of volatile products in the trapping solutions. Material balances ranged from 96.4 to 99.9%.

Aerobic Soil Metabolism (Somerville, 40798003)

The study is acceptable.

[¹⁴C]Amitraz (radiolabeled position unspecified, purity 96%) at 6 ug/g was incubated 364 days in silt loam and sandy loam soils at 25 C and 50% moisture capacity. Degradation occurred with a half-life of <1 day. Nonvolatile degradates were BTS 27919 (35.4% of applied), BTS 24868 (13.6%), and BTS 27271 (12.9%). At the end of the study, ¹⁴CO₂ was 24.8-34.5% of applied in the two soils; unextractable residues were 52.9-64.5%. Material balances ranged from 89.1 to 107.9%.

Anaerobic Soil Metabolism (Somerville, 40798003)

The study is scientifically sound and provides supplemental information on the soil metabolism of amitraz under anaerobic conditions. The major deficiency of the study was the 30-day aging period, the duration of which appeared excessive in light of the short half-life (<one day) of amitraz.

Amitraz degraded under 60 days of anaerobic conditions at 25 C in silt loam and sandy loam soils. The treated soils (6 ppm) had been previously aged for 30 days under aerobic conditions before being flooded with water and purged with N₂ to establish anaerobic conditions. While no half-life was calculated, 50% less CO₂ evolved from the soils than from the aerobic study, indicating slower metabolism is occurring. In addition, three degradates were produced: BTS 27919 (12.9% of applied), BTS 24868 (5.5%), and BTS 27271 (1.3%). Even though the study is supplemental, the study does not have to be repeated because no additional, useful data is likely to be obtained.

Mobility - Leaching and Adsorption/Desorption (Arnold and Barrett, 40780505)

This batch equilibrium study is unacceptable because the soils were sieved too finely (1 mm), rather than 2 mm, which would increase the clay content and favor adsorption. Also, desorption was not studied and the CECs were not typical of U.S. soils.

Mobility - Leaching and Adsorption/Desorption (Leake, 40931501)

The study is acceptable and meets EPA data requirements for the aged leaching of amitraz using soil columns.

Aged [^{14}C]amitraz residues were mobile in soil columns (30-cm length, 4.6-cm diameter) of sand, sandy loam, and clay loam soils that were treated with 1.38 lb ai/A (1.55 kg ai/ha, maximum field rate) [^{14}C]-ring-labeled amitraz. Radiochemical purity was 96.5%. The columns were leached with 844 ml of 0.01 M CaCl_2 solution (50.8 x cross sectional area of column). While the majority of the [^{14}C]residues (82.7-74.8%) were in the upper 10 cm of the column, the residues were distributed throughout the columns, with 5.2-1.55% of applied being found in the leachate. These residues were polar products and not identifiable with known degradates. Material balance ranged from 94.9 to 87.1% of applied for all the soil columns. Amitraz degraded with a half-life of <2 days. Amitraz was aged aerobically for 3 days at 25 C and 40% moisture capacity. Degradates identified were . . .

BTS 27271 [N-methyl-N'-(2,4-xylyl)formamidine];

BTS 27919 (form-2',4'-xylylidide); and

BTS 24868 (2,4-dimethylaniline).

Mobility - Leaching and Adsorption/Desorption (Fortsch, 40780516)

The study is scientifically sound and provides supplemental information on the soil column mobility of a degradate (BTS 27919) of amitraz. A major deficiency of the study was the leaching of the columns with only 20 cm of water instead of 50.8 cm.

[^{14}C]BTS 27919 residues were mobile in sand and loamy sand soil columns (30-cm length, 50-mm diameter) that were treated with 2-methyl-labeled BTS 27919 (purity >99%) at 0.82 kg/ha (0.73 lb/A) and leached with 20 cm (ca. 8 inches) of water. The residues were distributed throughout the columns with the upper 10 cm containing 33-43.4% of applied in the sand, 29.2-42.2% in one loamy sand, and 68.4-86.2% in the loamy sand soil. Activity in the leachate was <3.1% of applied for all three soils. Material balances were 85.9-90.4% for all columns.

Mobility - Leaching and Adsorption/Desorption (Fortsch, 40780516)

This study is scientifically sound and provides supplemental information on the soil column mobility of a degradate (BTS 27271) of amitraz. A major deficiency of the study was the leaching of the columns with only 20 cm of water instead of 50.8 cm.

[^{14}C]BTS 27271 residues were relatively immobile in sand and loamy sand soil columns (30-cm length, 50-mm diameter) that were treated with 2-methyl-labeled BTS 27271 (purity 95%) at 0.82 kg/ha (0.73 lb/A) and leached with 20 cm (ca. 8 inches) of water. The radioactivity remained in the upper 4-5 cm of the columns (73.6-91.3%), with <0.3% being leached from the columns. Identified in the extracts of the soil were BTS 27271 and BTS 27919. Material balances were 80.6-92.1% in all soil columns.

Mobility - Laboratory Volatility (Leake, 40780518)

The study is acceptable and meets EPA data requirements for laboratory volatility of [^{14}C]amitraz (formulated as a 20% EC) from sand soil.

Sand soil treated with ca. 1.38 lb ai/A (ca. 1.55 kg ai/ha) phenyl-labeled [^{14}C]amitraz (formulated as a 20% EC) was minimally volatile when incubated in the dark at 15 or 30 C for 17-18 days at 15-60% soil moisture capacity. At the end of 17-18 days, 0.1% of applied amitraz had evolved at 15 C and <0.9% at 30 C. Volatilization of total [^{14}C]residues (at 15 C) was <1.9%, regardless of moisture content (15 or 60%) or air flow (100 mL or 1 L/minute). The major volatile degradate was BTS 24868, with $^{14}\text{CO}_2$ also being detected. The major nonvolatile degradates were BTS-27919 and BTS 27271. Material balances ranged from 86.1 to 101.7% of the applied. The vapor pressure of amitraz was reported as 2.6×10^{-6} mm Hg (25 C); for BTS 27919, it was 2.6×10^{-5} ; for BTS 27271, it was 9.0×10^{-4} ; and for BTS 24868 (volatile degradate), it was 0.2 mm Hg.

Field Dissipation - Terrestrial (Manley and Snowden, 40798004)

The study is scientifically sound and provides supplemental information on the field dissipation of amitraz. The study does not fulfill EPA data requirements because the method of analysis for residues of amitraz were not available for review, storage stability data were not provided, and characterization of soils was incomplete, as were field test data.

The study indicated a half-life for parent of <<one day and for degradates/residues half-lives were 110 days (BTS 27271), 150 days (BTS 27919), and 450 days (total residues). The degradate BTS 27271 was $\leq$ 0.04 ppm in 8-12 inch core up to 364 days; BTS 27919 declined to <0.02 ppm in 4-8 inch core by 0-14 days. Although the study is supplemental, it does not have to be repeated since no additional, useful data is likely to be obtained.

Laboratory Accumulation - Fish (00072503)

The study may be acceptable if the information on the source of the degradates (specific fish tissue) is provided. It could not be determined if the data from the degradate analysis were for a single tissue (muscle, viscera, or carcass), or were averaged from all tissues. In addition, residues in the water were not identified.

Using a flow-through system that exposed bluegill sunfish to ca. 0.01 ppm of [^{14}C]amitraz (purity 99.7%) for 30 days, residues were observed to accumulate with maximum bioconcentration factors of ca. 280x for muscle, 2118x for viscera, 1467x for carcass tissues, and 933x for whole fish. At the end of the 14-day depuration period, residues were 0.5 ppm in muscle, 4.2 ppm in viscera, 3.8 ppm in carcass tissues, and 1.9 ppm in

whole fish. Analysis of the 21-day sample (tissue type unspecified) indicated the presence of the degradates BTS 27919 (18.0% of total activity), BTS 27271 (7.4%), polar products (8.5%), and unidentified compounds (12.6%).

8. RECOMMENDATIONS:

EFGWB recommends the following studies be done (or deficiencies satisfactorily addressed) before we can concur with the requested registration actions:

1. EUP on cotton -

- Leaching - Adsorption/Desorption (batch equilibrium)
- Rotational crop
- Accumulation in fish [data on source (fish tissue) of degradates]

2. EUP on citrus fruit -

- Leaching - Adsorption/Desorption (batch equilibrium)
- Accumulation in fish [data on source (fish tissue) of degradates]

3. Registration on citrus fruit -

- Photodegradation - soil (sensitivity of method needed)
- Leaching - Adsorption/Desorption (batch equilibrium)
- Accumulation in fish [data on source (fish tissue) of degradates]
- Field volatility

4. Response to guidance package on reregistration of amitraz-containing products-

- Photodegradation - soil (sensitivity of method needed)
- Leaching - Adsorption/Desorption (batch equilibrium)
- Accumulation in fish [data on source (fish tissue) of degradates]
- Accumulation in aquatic nontarget organisms
- Field volatility

9. BACKGROUND:

A. Introduction

This review addresses several registration-related actions: 1) request for an EUP on cotton, 2) request for an EUP on citrus, 3) application for registration of amitraz on citrus fruit, and 4) response to Registration Standard.

B. Directions for Use

Amitraz is an insecticide/acaricide registered for control of the

pear psylla and mites on pears as a foliar spray using air or ground equipment. The most commonly used equipment is the air blast sprayer. All formulations are single active ingredient and consist of a 1.5 lb/gal EC and a 50% WP. The 1.5 lb/gal EC may be applied to pears at a rate of 0.75-0.94 lb ai/A, as a 0.188-0.375 lb/100 gal concentration, or as a 3-6 oz/100 gal concentration. The 50% WP may be applied to pears at a rate of 0.75-1.5 lb ai/A or as a 3-6 oz/100 gal concentration. The label states that amitraz may not be applied to water because it is toxic to fish. Mixers and applicators must wear protective clothing. Applicators may, alternatively, use a tractor cab or airplane cockpit having a properly filtered air supply.

10. DISCUSSION OF INDIVIDUAL TESTS OR STUDIES:

See attached DATA EVALUATION RECORDS.

11. COMPLETION OF ONE-LINER:

The one-liner has been updated with the new data.

12. CBI APPENDIX:

There is no CBI in this review.