9/19/89

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

SEP 19 1989

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: PP#9E3754: Glyphosate in/on Some Tropical and Sub-tropical Minor Tree Crops. Evaluation of Analytical Methods and Residue Data. (MRID #401494-00, -1; DEB #5196)

FROM: W. T. Chin, Ph.D., Chemist
Tolerance Petition Section III
Dietary Exposure Branch
Health Effect Division (H7509C)

W. T. Chin

THRU: Philip V. Errico, Section Head
Tolerance Petition Section III
Dietary Exposure Branch
Health Effect Division (H7509C)

Philip V. Errico

TO: Hoyt Jamerson, PM #43
Minor Uses Officer
Registration Division (H7505C)

and

Toxicology Branch - HFA Support
Health Effect Division (H7509C)

BACKGROUND

The petitioner, IR-4, and the Agricultural Experiment Stations of Florida, California, Hawaii and Puerto Rico request the establishment of a tolerance for the combined residues of the herbicide glyphosate and its metabolite, N-aminomethylphosphonic acid (AMPA) in or on the following RACs at 0.2 ppm: date, breadfruit, jaboticaba, jackfruit, persimmon, black sapote, white sapote, soursop, tamarind and canistel. A letter of authroization (3/15/89) written by G. B. Fuller of Monsanto Co. is submitted.

Tolerances of glyphosate and AMPA have been established on various RACs under 40 CFR 180.364, 185.3500 and 186.3500. The Agency has issued the Glyphosate Guidance Document in June, 1986.

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CONCLUSIONS

1. The metabolism of glyphosate in plants is adequately understood. The residues of concern are the parent compound and its metabolite, AMPA.

2. There are no feed items associated with the proposed minor tree crops. Therefore, there should be no problem with secondary residues in meat, milk, poultry and eggs.

3. The residue data generated from the field trials conducted in a date grove are considered adequate to support the proposed 0.2 ppm tolerance on the minor tree crops.

4. Adequate analytical methods are available. Methods for enforcement purposes are available in PAM II.

5. There are no Canadian, Maxican and Codex tolerances for glyphosate and AMPA established in or on the proposed RACs. Therefore, there are no compatibility problems involved in this petition.

RECOMMENDATIONS

TOX considerations permitting, DEB recommends for the establishment of a tolerance for the combined residues of the herbicide glyphosate and its metabolite AMPA in or on the following RACs at 0.2 ppm: date, breadfruit, jaboticaba, jackfruit, persimmon, black sapote, white sapote, soursop, tamarind and canistel.

DETAILED CONSIDERATIONS

Manufacture and Formulation

The manufacture process of glyphosate was reviewed in detail in connection with PP#6E3380/FAP#6H5502 (see J, Stokes' 9/1/87 and W. T. Chin's 8/13/87 memos). Levels of N-nitrosoglyphosate in the technical product and nitrosoamines in Roundup® has been adequately addressed (see W. Dykstra's 2/11/88 and W. T. Chin's 2/25/88 memos in connection with PP#6E3424).

The proposed formulation is Roundup® Herbicide (EPA Reg. No. 524-308-AA), a water soluble liquid containing 3 lb glyphosatic acid equivalent/gal.

Proposed Use

For control of various emerged annual and perennial weeds for the proposed RACs tree crops, Roundup® Herbicide is recommended to be applied as a directed spray

onto emerged weeds at rates dependent upon weed height and species. Repeat treatments are allowed. Do not apply more than 5.0 lb ai (10.6 qts of product)/A/year. Allow a minimum of 14 days between last application and harvest. Avoid contact of spray with desirable vegetation. A 0.5% to 1.0% non-ionic surfactant concentration may be present in the spray mix and a 2% dry ammonium sulfate may also be added.

Nature of Residue

The nature of residue in plants is adequately understood. The residues of concern are glyphosate and its metabolite, AMPA (see the Residue Chemistry Science Support Chapter to the Glyphosate Registration Standard dated 5/31/85).

There are no feed items associated with the proposed minor tree crops. Therefore, there should be no problem with secondary residues in meat, milk, poultry and eggs.

Analytical Methodology

The method used for residue analysis is entitled "HPLC Fluorometric Method for the Analysis of Glyphosate and AMPA in RACs and Water" (MRID #405780-03). The sensitivity of this method is 0.05 ppm. Recoveries of 111%-130% were reported at fortifications of 0.08 ppm level. Examples of calculations and chromatograms are adequately submitted. Glyphosate and AMPA are stable during frozen storage for at least 6 months.

At least three method trials have been successfully conducted with GC or HPLC (see Residue Chemistry Science Support Chapter, 5/31/85). Enforcement Methods are available in PAM II.

Residue Data

A field trial was conducted during the 1987-1988 season. Roundup® was broadcast applied 4 times to growing weeds in a date grove in California at the rates of 5.0 lb (1X) and 10.0 lb (2X) active ingredient per acre. Additional treatments utilized applications of glyphosate as a spot spray.

Fresh dates were harvested from each plot one day after application. Dates also were processed according to local grower practice. All samples were frozen after collection and analyzed within 6 months. Results of residue analysis indicated that non-detectable (<0.05 ppm each) residues of glyphosate and AMPA were determined in all samples.

The proposed PHI is 14 days. However, residue data of dates were generated at a PHI of one day. Since absorption of glyphosate by plants from soil is known to be very limited, DEB will not raise questions in this respect.

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Field trials on other proposed tree crops are not conducted. However, DEB concludes that additional field trials on other proposed RACs are not needed based on the following reasons:

1. At the maximum rate of 6.0 lb ai/A/year and a PHI of 14 days, a 0.2 ppm tolerance for glyphosate and AMPA has been established in/on the following tree crops in connection with PP#3E2929: acerola, olives, kiwifruit and figs. In this petition, no residues (<0.05 ppm) have been detected in/on the Roundup®-treated samples.

2. Under 40 CFR 180.364, a 0.2 ppm tolerance for glyphosate and AMPA was also established on the following tree crops with similar proposed uses of Roundup®: avocados, citrus fruits, nuts, mangoes, papayas, pome fruits, stone fruits.

3. Glyphosate is known to be a water soluble chemical and does not transport into plants from soil. Residues are expected to be mainly due to contamination (e.g., spray drift). Therefore, significant amounts of residues are not expected to be detected in tree crops.

According to 40 CFR 180.34(d)(e) and based on the residue data submitted and information mentioned above, DEB concludes that the residue data submitted are adequate to support the proposed use.

Meat, Milk, Poultry and Eggs

There are no feed items associated with the proposed minor tree crops. Therefore, there should be no problem with secondary residues in meat, milk, poultry and eggs.

Other Considerations

There are no Canadian, Mexican and Codex tolerances for glyphosate and AMPA established in or on the proposed RACs. Therefore, there are no compatibility problems.

Attachment: Codex Sheet.

cc: Circu., R.F., PP#9E3754, W.T.Chin, R.D.Schmitt, PMSD-ISB, Glyphosate Reg. Std.

RDI: P.V.Errico(9/15/89), R.Loranger(9/15/89)
H7509C: DEB: CM#2, RM812,557-4352, W.T.Chin,wc(9/18/89)

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INTE ATIONAL RESIDUE LIMIT STA

J. [illegible] 8/7/31

CHEMICAL Glyphosate

CODEX NO. 158

CODEX STATUS:

/V/ No Codex Proposal
Step 6 or above (on crops listed)

Residue(if Step 8): ____________

glyphosate per se

Crop(s)	Limit (mg/kg)

PROPOSED U.S. TOLERANCES:

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RCB Reviewer W. T. Chin

Residue: Glyphosate & N-aminomethylphosphonic acid (AMPA)

Crop(s)	Limit (mg/kg)
Date	0.2
Breadfruit	0.2
Jaboticaba	0.2
Jackfruit	0.2
Persimmon	0.2
Black Sapote	0.2
White "	0.2
Soursop	0.2
Tamarind	0.2
Canistel	0.2

CANADIAN LIMITS:

/ / No Canadian limit

Residue: glyphosate per se

Crop(s)	Limit (mg/kg)
all food crops	0.1 *

MEXICAN LIMITS:

/V/ No Mexican limit

Residue: ____________

Crop(s)	Limit (mg/kg)

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NOTES:
* negligible residue type limit

Form revised 1986