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

June 16, 1994

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: Metalaxyl (113501) - Case No. 0081.
Product and Residue Chemistry Chapters for the Reregistration Eligibility Document (RED).
CB No. 12906. DP Barcode: D197037.

FROM: Susan V. Hummel, Chemist
Special Review Section II
Chemistry Branch II - Reregistration Support
Health Effects Division (H7509C)

THROUGH: Francis B. Suhre, Section Head
Special Review Section II
Chemistry Branch II - Reregistration Support
Health Effects Division (H7509C)

TO: Debra Edwards, Chief
Chemical Coordination Branch
Health Effects Division (H7509C)

Attached are the Product and Residue Chemistry chapters for the Metalaxyl RED. These chapters were completed by Dynamac Corporation under the supervision of CBRS, HED. They have undergone secondary review in the branch and have been revised to reflect Agency policies.

All Product Chemistry data requirements for the TGAI are satisfied for the Ciba Geigy 90% T (EPA Reg. No. 100-601). Some additional physical and chemical characteristics are needed for the MP.

The chemical name of the metalaxyl metabolite included in the tolerance expression in 40 CFR 180.408 (a) and (c), 185.4000 (a), and 186.4000 (a) needs to be corrected. The correct chemical name is N-2-hydroxymethyl-6-methyl*phenyl*)-N-methoxyacetyl)-alanine methyl ester. A final decision on the form of the tolerance expression for livestock commodities will be made after additional recovery data are submitted for several livestock metabolites.

According to REFS, a 50% wettable powder (WP) formulation of metalaxyl was recently registered for multiple foliar applications to several crops (EPA Reg. No. 100-735). Residue data are not available to support the use of multiple foliar and other late season postemergence applications (7-30 day PHI) of this type of

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formulation. A limited set of side by side field trial data are needed for the WP formulation on asparagus, fruiting vegetables, and strawberries showing comparable residue levels for the WP and EC formulations.

Additional recovery data are needed for several metalaxyl hydroxy metabolites in livestock commodities to permit final calculations of residues in livestock commodities. Upper bound estimates of livestock residues have been made for the RED.

Storage stability data are still needed for processed commodities and livestock commodities. Data are needed for metalaxyl and representative metabolites.

Additional confined rotational crop studies and field rotational crop studies have been submitted and are under review.

For dietary exposure assessment, current and/or recommended tolerance levels should be used, except for livestock commodities. For livestock commodities, the upper bound residue levels calculated should be used. Since tolerance levels and upper bound residue estimates are being used for dietary exposure assessment, the dietary exposure to residues of metalaxyl is likely to be greatly overestimated.

If you need additional input, please advise.

Attachment 1 & 2: Metalaxyl Product and Residue Chemistry RED chapters (respectively)

cc (with Attachments 1 & 2): Circ, Reg.Std.F., SF, S. Hummel, SRRD, Dynamac
cc (without Attachments): RF
RDI:FBS:06/13/94:MM:06/16/94:EZ:06/16/94
H7509C:CBRS:SVH:svh:CM#2:RM804:06/16/94:METALRED.946

DYNAMAC
CORPORATION
Environmental Services

Final Report

METALAXYL
Shaughnessy No. 113501
Case No. 0081
(CBRS Nos. 12906 & 12907, DP Barcodes D197037 & D197066)

TASK 2A
Reregistration Eligibility Document: Product Chemistry Considerations

May 5, 1994

Contract No. 68-D2-0053

Submitted to:
U.S. Environmental Protection Agency
Arlington, VA 22202

Submitted by:
Dynamac Corporation
The Dynamac Building
2275 Research Boulevard
Rockville, MD 20850-3268

METALAXYL

REREGISTRATION ELIGIBILITY DOCUMENT:

PRODUCT CHEMISTRY CONSIDERATIONS

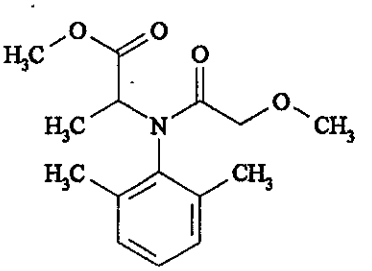
(Shaughnessy No. 113501; Case No. 0081)

CBRS Nos. 12906 and 12907; DP Barcodes D197037 and D197066

TASK 2A

DESCRIPTION OF CHEMICAL

Metalaxyl [N-(2,6-dimethylphenyl)-N-(methoxyacetyl)-alanine methyl ester] is a systemic fungicide registered for use on a variety of crops/sites (primarily citrus, cotton, cucurbits, onions, ornamentals, potatoes, soybeans (seed treatment), tobacco, tomatoes, and turf).



Empirical Formula:	$C_{15}H_{21}NO_4$
Molecular Weight:	279.3
CAS Registry No.:	57837-19-1
Shaughnessy No.:	113501

IDENTIFICATION OF ACTIVE INGREDIENT

Technical metalaxyl is a white to beige crystalline solid with a melting point of 71-72 C and a vapor pressure of 2.2×10^{-6} mm Hg at 20 C. The solubility of metalaxyl in water at 20 C is 7.1 g/L. Metalaxyl is also readily soluble in most organic solvents (i.e., 65% soluble in methanol and 55% soluble in benzene).

MANUFACTURING-USE PRODUCTS

A search of the Reference File System (REFS) conducted 3/22/94 identified a single metalaxyl manufacturing-use product (MP) registered to Ciba-Geigy Chemical Company,

the 90% technical (T; EPA Reg. No. 100-601). This product is the only MP subject to a reregistration eligibility decision.

REGULATORY BACKGROUND

The 12/81 Metalaxyl Guidance Document was developed in conjunction with the initial registration of the pesticide, which consisted of non-food uses only. Because metalaxyl was subsequently registered for numerous food/feed uses, the data addressed in the original Guidance Document were reevaluated and a second Guidance Document was issued 9/88. Additional data were required for the following GLNs: 61-2, 61-3, 62-1, 62-2, and 62-3. Data submitted in response to the 12/88 Guidance Document were evaluated in the Metalaxyl Reregistration Standard Update dated 3/13/91; additional data were required for GLNs 61-1, 61-2, 61-3, and 62-2. Although physical/chemical data from the 12/81 Guidance Document are considered to be adequate to fulfill data requirements for the TGAI, data pertaining to the following MP GLNs have not been submitted for the 90% T: 63-14, 63-16, 63-17, and 63-20.

The current status of the product chemistry data requirements for the Ciba-Geigy metalaxyl technical is presented in the attached data summary table. Refer to this table for a listing of the outstanding product chemistry data requirements. The nitrosamine content of technical metalaxyl is not expected to be of dietary concern because nitrosamines were detected at <1 ppm.

CONCLUSIONS

All of the product chemistry data requirements pertaining to the TGAI are satisfied for the Ciba-Geigy 90% T (EPA Reg. No. 100-601); however, some physical/chemical characteristics of the MP remain outstanding. Provided that the registrant either certifies that the suppliers of starting materials and the manufacturing process for the metalaxyl technical product have not changed since the last comprehensive product chemistry review or submits a complete updated product chemistry data package, CBRS has no objections to the reregistration of metalaxyl with respect to product chemistry data requirements.

AGENCY MEMORANDA CITED IN THIS DOCUMENT

CB No(s).:	8166
DP Barcode(s):	D165989
Subject:	Metalaxyl. Ciba-Geigy Response to the Reregistration Standard: Product Chemistry Data (MRID No. 41912901), Storage Interval Data (MRID No. 41912902), and Corn Fodder Data (MRID No. 41912903).
From:	J. Abbotts
To:	L. Rossi
Dated:	04/16/92
MRID(s):	41912901

CB No(s).:	10303 and 9962
DP Barcode(s):	D181027 and D178783
Subject:	Metalaxyl. Ciba-Geigy Product Chemistry of Selected Impurities in Tox-Tested Samples vs. "Current" [1982] and Proposed CSFs, and for 61-1, 62-1, 62-2, and 62-3.
From:	K. Dockter
To:	L. Rossi and N. Thoa
Dated:	9/29/92
MRID(s):	42319901, 42409201, and 42409202

CB No(s).:	11937
DP Barcode(s):	D191625
Subject:	Metalaxyl Reregistration. Ciba's 5/4/93 Response [CSF & Nitrosamine Data for Technical; 100-601] to Our 9/29/92 Review & Related 3/23 & 30/93 Telecons.
From:	K. Dockter
To:	P. Perreault
Dated:	6/30/93
MRID(s):	42762801 and 42762802

PRODUCT CHEMISTRY CITATIONS

Bibliographic citations include only MRIDs containing data which fulfill data requirements.

References (cited):

00104483 Ciba-Geigy Corp. (1978) [Chemical Data on the Fungicide Ridomil]. (Compilation; unpublished study received Jul 13, 1978 under 100-EX-63; CDL:234427-A).

00104498 Ciba-Geigy Corp. (1978) [Chemistry of CGA-48988 Technical]. (Compilation; unpublished study received Sep 5, 1978 under 100-601; CDL:235062-A).

40435001 Ciba Geigy Corp. (1982) Product Chemistry for Product Containing Metalaxyl. Unpublished study. 4 p.

41055201 Lail, L. (1989) Technical Metalaxyl: Product Chemistry: Study No. PC-88-005. Unpublished study prepared by Ciba-Geigy Corp. 51 p.

41055202 Lail, L. (1989) Technical Metalaxyl: Product Chemistry: Study No. PC-88-005. Unpublished study prepared by Ciba-Geigy Corp. 120 p.

41912901 Lail, L. (1989) Technical Metalaxyl: A Supplement to the Product Chemistry. Unpublished study prepared by Ciba-Geigy Corp. 31 p.

42319901 Lail, L. (1992) Technical Metalaxyl Supplement to Product Chemistry. Unpublished study prepared by Ciba-Geigy Corp. 18 p.

42409201 Lail, L. (1989) Technical Metalaxyl: Supplement to Product Chemistry. Unpublished study prepared by Ciba-Geigy Corp. 7 p.

42409202 Lail, L. (1989) Technical Metalaxyl: Supplement to Product Chemistry. Unpublished study prepared by Ciba-Geigy Corp. 7 p.

42762801 Lail, L. (1992) Technical Metalaxyl: Supplement to Product Chemistry. Unpublished study prepared by Ciba Plant Protection. 8 p.

42762802 Lail, L. (1992) Technical Metalaxyl: Supplement to Product Chemistry. Unpublished study prepared by Ciba Plant Protection. 28 p.

Case No. 0081
Chemical No. 113501

Case Name: Metalaxyl
Registrant: Ciba-Geigy Corporation
Product(s): 90% T (EPA Reg. No. 100-601)

PRODUCT CHEMISTRY DATA SUMMARY

Guideline Number	Requirement	Are Data Requirements Fulfilled? [a]	MRID Number [b]
61-1	Product Identity and Disclosure of Ingredients	Y	00104498 41055201 *41912901* 42409201 [c] 42762801 [d] 42762802 [d] CSF dated 5/2/93 [d]
61-2	Starting Materials and Manufacturing Process	Y	41055201 *41912901*
61-3	Discussion of Formation of Impurities	Y	41055201 41055202 *41912901*
62-1	Preliminary Analysis	Y	41055202 42319901 [c] 42762801 [d] 42762802 [d]
62-2	Certification of Ingredient Limits	Y	41055201 41055202 *41912901* 42409202 [c]
62-3	Analytical Methods to Verify the Certified Limits	Y	41055202 *41912901*
63-2	Color	Y	00104483
63-3	Physical State	Y	00104483
63-4	Odor	Y	00104483
63-5	Melting Point	Y	00104483
63-6	Boiling Point	N/A [c]	
63-7	Density, Bulk Density or Specific Gravity	Y	00104483
63-8	Solubility	Y	00104483
63-9	Vapor Pressure	Y	00104483
63-10	Dissociation Constant	Y	00104483
63-11	Octanol/Water Partition Coefficient	Y	40435001
63-12	pH	Y	40435001
63-13	Stability	Y	00104483
63-14	Oxidizing or Reducing Action	N	
63-15	Flammability	N/A [c]	
63-16	Explodability	N	
63-17	Storage Stability	N	
63-18	Viscosity	N/A [c]	
63-19	Miscibility	N/A [c]	
63-20	Corrosion Characteristics	N	

[a] Y = Yes; N = No; N/A = Not Applicable.

[b] **Bolded** references were reevaluated/reviewed in the Metalaxyl Guidance Document dated 9/88; underlined references were reviewed in the Metalaxyl Reregistration Standard Update dated 3/13/91; *italicized* references were reviewed under CB No. 8166, D165989, dated 4/16/92, by J. Abbotts; remaining references reviewed as noted.

[c] CB Nos. 10303 and 9962, D181027 and D178783, dated 9/29/92, by K. Dockter

[d] CB No. 11937, D191625, dated 6/30/93, by K. Dockter.

[e] Data are not required because the TGAI/MP is a solid at room temperature.

DYNAMAC
CORPORATION
Environmental Services

Final Report

METALAXYL
Shaughnessy No. 113501
Case No. 0081
(CB No. 12906, DP Barcode D197037)

TASK 2B
Reregistration Eligibility Document:
Residue Chemistry Considerations

June 15, 1994

Contract No. 68-D2-0053

Submitted to:
U.S. Environmental Protection Agency
Arlington, VA 22202

Submitted by:
Dynamac Corporation
The Dynamac Building
2275 Research Boulevard
Rockville, MD 20850-3268

METALAXYL

REREGISTRATION ELIGIBILITY DOCUMENT

RESIDUE CHEMISTRY CONSIDERATIONS

Shaughnessy No. 113501; Case 0081

(CB No. 12906; DP Barcode D197037)

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METALAXYL

REREGISTRATION ELIGIBILITY DOCUMENT

RESIDUE CHEMISTRY CONSIDERATIONS

Shaughnessy No. 113501; Case 0081

(CBRS Nos. 12906 and 12907; DP Barcodes D197037 and D197066)

TASK 2B

INTRODUCTION

Metalaxyl [N-(2,6-dimethylphenyl)-N-(methoxyacetyl) alanine methyl ester] is a fungicide registered for use as a seed treatment, soil application, and/or foliar application on a variety of food and feed crops, including: alfalfa, almonds, apples, artichokes (Jerusalem), asparagus, avocados, beets (table/garden), blueberries, broccoli, cabbage, carrots, cassava, cauliflower, cereal grains, chicory, Chinese broccoli (gai lon), Chinese cabbage (tight heading varieties), citrus fruits, corn, cotton, cranberries, cucurbit vegetables, dill, eggplants, forage grasses, forage legumes, ginger, ginseng, grapes, hops, horseradish, legume vegetables, lettuce, okra, onions (bulb and green), papaya, parsnips, peanuts, peppers, pineapples, potatoes, radishes, raspberries, rice, rutabaga, salify, soybeans, spinach, stone fruits, strawberries, sugar beets, sweet potato, tomato, turnips, walnuts, and yams. The metalaxyl formulations registered for soil and foliar application include granular (G), wettable powder (WP), and emulsifiable concentrate (EC) formulations. Formulations registered for use as seed treatments include WPs and a flowable concentrate (FlC).

Tolerances for residues of metalaxyl in/on raw and processed plant commodities and animal commodities are currently expressed in terms of the combined residues of metalaxyl [N-(2,6-dimethylphenyl)-N-(methoxyacetyl) alanine methyl ester] and its metabolites containing the 2,6-dimethylaniline moiety, and N-(2-hydroxymethyl-6-methyl)-N-(methoxyacetyl) alanine methyl ester or N-(2-hydroxymethyl-6-methylphenyl)-N-(methoxyacetyl) alanine methyl ester [*Source: 40 CFR 180.408(a), (b), and (c), 40 CFR 185.4000, and 40 CFR 186.4000*]. The correct chemical nomenclature for the metalaxyl metabolite included in the tolerance expression is N-(2-hydroxymethyl-6-methyl*phenyl*)-N-(methoxyacetyl) alanine methyl ester. The metalaxyl tolerance expressions in 40 CFR 180.408 (a) and (c), 105.4000 (a), 186.4000 (a) should be corrected.

REGULATORY BACKGROUND

Metalaxyl was the subject of a Reregistration Standard and Guidance Document 12/81 and a Final Registration Standard and Tolerance Reassessment (FRSTR), Residue Chemistry Chapter dated 6/22/87 and Guidance Document dated 9/88. The Metalaxyl Reregistration

Update is dated 3/13/91. The information contained in this document outlines the Residue Chemistry Science Assessments with respect to the reregistration of metalaxyl.

Metabolites which may not be covered by the current tolerance expression have been identified in livestock metabolism studies. Up to 34% of the residue in ruminants and poultry are compounds containing the 2-hydroxymethyl-6-methyl aniline moiety other than N-(2-hydroxymethyl-6-methyl)-N-methoxyacetyl alanine methyl ester, which is currently regulated. The HED Metabolism Committee (9/10/93) has determined that the residues to be regulated in livestock commodities are metalaxyl, metabolites that can be converted to 2,6-dimethyl aniline (2,6-DMA), and those containing the 2-hydroxymethyl-6-methyl aniline (HMMA) moiety. However, additional data are required to demonstrate the recovery of HMMA-containing metabolites as 2,6-dimethyl aniline by the livestock tolerance enforcement method. The wording of the tolerance expression will depend on the recovery of HMMA containing metabolites using the current enforcement method. These data are outstanding, but considered confirmatory, since sufficient information is available to do a reasonable upper bound dietary exposure assessment. Residues of concern not recovered by enforcement methodology, and therefore not included in the tolerance expression, are included in the anticipated residues provided in this document. The chemical structures of the metabolites of concern are presented in Figure A.

Figure A. The chemical structure of metalaxyl and its metabolites of concern.

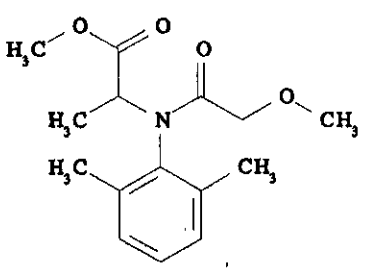
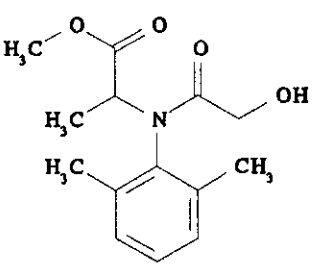
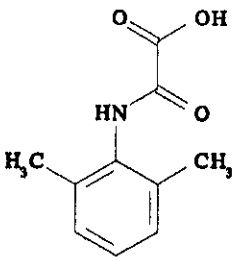
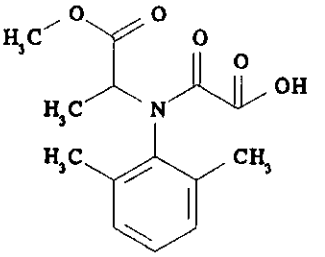
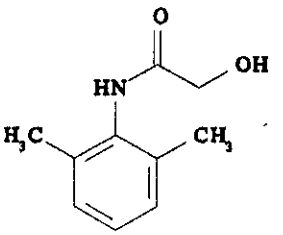
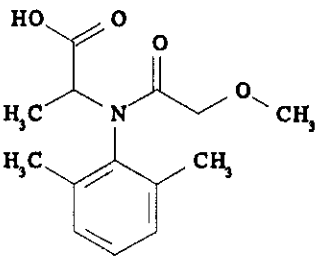
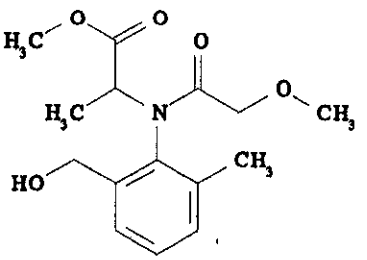
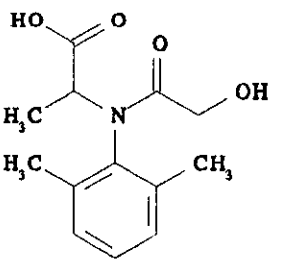
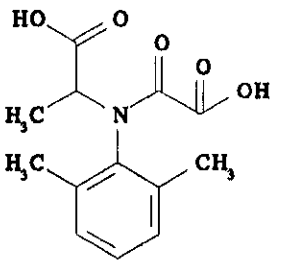
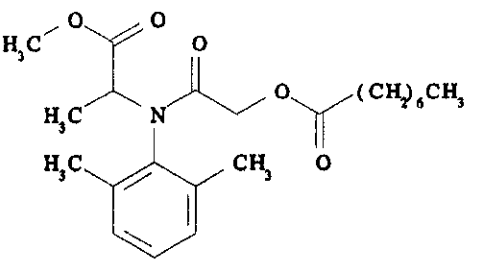
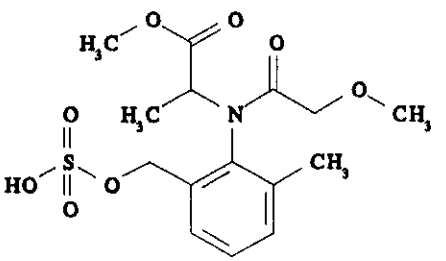
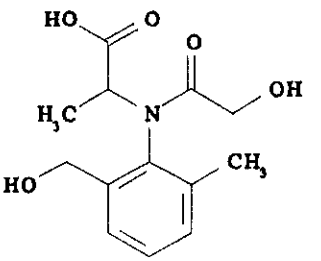
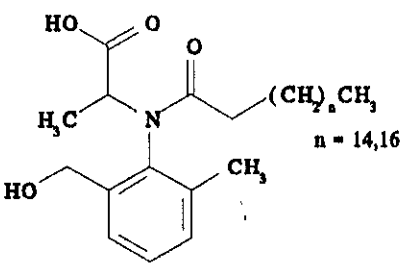
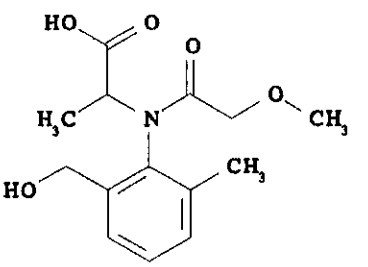
Structure **Metabolite:** Chemical name	Structure **Metabolite:** Chemical name
 **metalaxyl:** N-(2,6-dimethylphenyl)-N-(methoxyacetyl) alanine methyl ester	 N-(2,6-dimethylphenyl)-N-(hydroxyacetyl)alanine methyl ester

Figure A *(continued)*.

Structure **Metabolite:** Chemical name	Structure **Metabolite:** Chemical name
 N-(oxalyl)-2,6-dimethylaniline	 N-(oxalyl)-N-(2,6-dimethylphenyl)alanine methyl ester
 N-(2,6-dimethylphenyl)-2-hydroxyacetamide	 N-(2,6-dimethylphenyl)-N-(methyloxyacetyl)alanine
 N-[2-hydroxymethyl)-6-methylphenyl]-N-(methoxy acetyl)alanine methyl ester	 N-(2,6-dimethylphenyl)-N-(hydroxyacetyl)alanine

(continued)

Figure A *(continued)*.

Structure **Metabolite:** Chemical name	Structure **Metabolite:** Chemical name
 N-(oxalyl)-N-(2,6-dimethylphenyl)alanine	 N-decanoic acid ester of N-(2,6-dimethylphenyl)-N-(hydroxyacetyl)alanine methyl ester
 Sulfuric acid ester of N-[2-hydroxymethyl)-6-methyl-phenyl]-N-(methoxyacetyl)alanine methyl ester	 N-[2-(hydroxymethyl)-6-methylphenyl]-N-(hydroxyacetyl)alanine
 N-Fatty acid amide conjugates of N-[2-hydroxymethyl)-6-methylphenyl]alanine	 N-[2-(hydroxymethyl)-6-methylphenyl-N-(methoxyacetyl)alanine

(continued)

SUMMARY OF SCIENCE FINDINGS

GLN 171-3: Directions for Use: A REFs search conducted 3/22/94 revealed that there are 18 end-use products (Eps) of metalaxyl presently registered to Ciba-Geigy Corporation which may be used on food/feed crops. These Eps are presented below.

Registrant EPA Reg. No.	Acceptance Date	Formulation Class	Product Name
Ciba-Geigy Corporation			
100-664	1/25/94	1% G	Ridomil PC® 11G Granular Fungicide
100-713	1/25/94	1% G	Ridomil PC® Granular Fungicide
100-676	1/15/90 [a]	2% G	Subdue® Granular Fungicide
100-628 [b]	12/2/93	5% G	Ridomil® 5G Fungicide
100-646	1/15/90 [a]	5% G	Subdue® 5G Fungicide
100-749	3/4/94	7% WP	Ridomil® MZ Fungicide
100-658	1/31/94	9% WP	Ridomil®/Bravo® 81W Fungicide
100-629 [c]	11/19/92	10% WP	Ridomil® MZ58 Fungicide
100-720	1/31/94	10% WP	Ridomil®/Copper 70W Fungicide
100-639	10/19/92	25% WP	Apron® 25W Fungicide
100-717	1/14/94	25% WP	Subdue® II Fungicide
Not available [d]	--	35% WP	Apron® 70 SD Fungicide
Not available [e]	--	35% WP	Apron® 35 SD Fungicide
100-672	1/15/90 [a]	45% WP	Apron® T69 Fungicide
Not available [f]	--	45% WP	Apron® T69 SD Fungicide
100-735	5/3/94	50% WP	Ridomil® 50W Fungicide
100-738	2/26/93	50% WP	Apron® 50W Fungicide
100-607 [g]	12/7/93	2 lb/gal EC	Ridomil® 2E Fungicide
100-619	12/7/93	2 lb/gal EC	Subdue® 2E Fungicide
100-626	9/18/89	2 lb/gal EC	Apron® 2E Fungicide
100-684	6/8/89	3 lb/gal FlC	Apron® Flowable Fungicide

[a] Copy of label was obtained from a Product Label DCI dated 1/15/90.
[b] Includes SLN Nos. AR90000502 and OK90000500.
[c] Includes SLN Nos. ME92000200, ND92000200, and WA92004200.
[d] Includes SLN Nos. CA85007300, ID83003300, and WA83003500.
[e] Includes SLN No. WA90003300.
[f] Includes SLN Nos. CA87000700, ID86001900, and WA86002800.
[g] Includes SLN Nos. AR90000501, AZ85000800, AZ86001500, CA82002400, CA85006800, CA86001800, CA90004700, CO88000100, FL86000200, FL89002300, ID89000500, LA92000400, OK90000500, OR89000800, TX91001100, WA87000200, and WA89001500.

A comprehensive summary of the registered food/feed use patterns of metalaxyl, based on these product labels, is presented in Table A. The 50% wettable powder (WP) formulation (EPA Reg. No. 100-735) was registered recently without review by the Chemistry Branches. The label permits the first post emergence of a EP formulation on a number of crops. Multiple foliar and other post-emergence applications are permitted throughout the growing season. These uses are not supported by residue data. A tabular summary of the residue chemistry science assessments for reregistration of metalaxyl is presented in Table B. The conclusions listed in Table B regarding the reregistration eligibility of metalaxyl food/feed uses are based on the use patterns registered by the basic producer, Ciba-Geigy Corporation. When end-use product DCIs are developed (e.g., at issuance of the RED), RD should require that all end-use product labels (e.g., MAI labels, SLNs, and products subject to the generic data exemption) be amended such that they are consistent with the basic producer labels.

GLN 171-4 (a): Plant Metabolism: The qualitative nature of the residue in plants is adequately understood. Studies with potatoes, lettuce, grapes, and tobacco indicate that metalaxyl is taken up, translocated, and extensively metabolized by plants. Metabolism involves oxidation of the ring-methyl group and hydrolysis of the methyl ester and methyl ether bonds; metabolites can be conjugated to glucose. Studies with [^{14}C]metalaxyl-treated seed indicate that no appreciable residue was transferred from treated seed to edible mature plant parts. The residues to be regulated in plant commodities are those in the current tolerance expression, which include metalaxyl, metabolites that can be converted to 2,6-dimethyl aniline (2,6-DMA), and one metabolite containing the 2-hydroxymethyl-6-methyl aniline (HMMA) moiety, N-(2-hydroxymethyl-6-methylphenyl)-N-(methoxyacetyl) alanine methyl ester. The chemical name of the hydroxy metabolite should be corrected in 40 CFR 180.408 (a) and (c), 185.4000 (a), and 186.4000 (a).

GLN 171-4 (b): Animal Metabolism: The qualitative nature of the residue in animals is adequately understood. Metabolism in ruminants is via hydrolysis to the ester alcohol and acid alcohol, which may then be de-alkylated. In ruminants, metalaxyl may also be oxidized to benzylic alcohol or phenolic compounds. Some breakdown products may be conjugated with glucuronic acid. A major residue in milk is a mixture of the N-octanoic- and N-decanoic acid ester of metabolite CGA-67869 [(N-(2,6-dimethylphenyl)-N-(hydroxyacetyl)-aniline methyl ester]. 2,6-DMA-based residues accounted for up to ~50% of the residues in ruminant tissues. HMMA containing compounds comprised 34% of the residue in kidney and 12-14% in muscle and fat. The parent compound is rapidly excreted.

In poultry, metalaxyl is hydrolyzed to either the benzyl alcohol or the ester alcohol. The benzylic alcohol is converted to a sulfate and the ester alcohol is conjugated with fatty acid or converted to the acid alcohol, which is subsequently hydrolyzed to the benzylic alcohol. The predominant residues in poultry are the disubstituted free acid forms of the hydroxy metabolite CGA-94689 isomers (~47% in thigh muscle and 24% in egg), the sulfuric acid conjugate of the hydroxy metabolite (30% in thigh muscle), fatty acid conjugates of the disubstituted free acids of CGA-94689 (27% in fat), and CGA-107955, N-(2,6-dimethylphenyl)-N-hydroxyacetyl)alanine, (40% in fat).

The HED Metabolism Committee (9/10/93) has determined that the residues to be regulated are metalaxyl, metabolites that can be converted to 2,6-dimethyl aniline (2,6-DMA), and those containing the 2-hydroxymethyl-6-methyl aniline (HMMA) moiety. Some metabolites containing the HMMA moiety may be convertible to 2,6-DMA and thus measured by the current enforcement methodology. Data showing percent conversion of HMMA metabolites to DMA are outstanding (enforcement method recovery data for HMMA metabolites). The wording of the tolerance expression for livestock commodities will be determined after these data are submitted. Residue levels estimated in this RED chapter for livestock commodities represent an upper bound for HMMA containing metabolites.

GLN 171-4 (c) and (d): Residue Analytical Methods - Plants and Animals: Adequate enforcement methods are available for the determination of residues of metalaxyl and regulated metabolites in plants. Methods I and II in PAM, Vol. II correspond to Methods AG-348 and AG-349. Method AG-395, an improved modification of AG-348, has undergone successful Agency validation with plant matrices.

Metabolites which may not be covered by the current tolerance expression have been identified in livestock commodities. Additional validation data are needed to demonstrate that Method AG-576 adequately recovers metabolites containing the 2,6-DMA moiety and HMMA containing metabolites as 2,6-dimethyl aniline. Method AG-576 is a combination of Method II in PAM, Vol. II and AG-395, both of which have undergone successful Agency validation, and adequately recovers metalaxyl, per se. Method AG-576 may be adequate for enforcement of tolerances in animal commodities, if it is proven to adequately recover all residues of concern. If significantly less than 100% of the total toxic residue is recovered using Method AG-572, then residue levels used in future risk assessments may need to be adjusted to account for this.

Metalaxyl, per se, is completely recovered (>80%) using FDA Multiresidue Protocol D (PAM, Vol. I Section 232.4), and is not recovered by Protocol E (PAM, Vol. I Sections 211.1/231.1 and 212.1/232.1) [*Source: PESTDATA, PAM, Vol. I, Appendix, 8/93*]. Multiresidue data for representative metalaxyl metabolites have been forwarded to FDA.

GLN 171-4 (e): Storage Stability: Adequate storage stability data are available to support residue studies on raw agricultural commodities stored less than 24 months at temperatures of -20 C or less, with the exception of oilseed and grain crops. An interim storage stability study on cranberries, potatoes, peppers, and spinach indicate that weathered residues determined as 2,6-DMA are stable in samples stored (-20 C) for 18-24 months. A final report reflecting 38 months storage of these matrices is expected to be confirmatory. Storage stability data for metalaxyl and representative metabolites in a representative oilseed (e.g., soybean or nut) and grain (e.g., wheat) are required.

No storage stability data are available to support processing studies. Storage stability data for metalaxyl and representative metabolites are required from all processed commodities of an oilseed, a grain, and a fruit or fruiting vegetable.

Storage stability data for metalaxyl and representative metabolites in livestock commodities representing one year of frozen storage are required. Considering the demonstrated storage stability on several crops, the outstanding storage stability data are considered confirmatory.

GLN 171-4 (k): Magnitude of the Residue in Plants: All data requirements for magnitude of the residue in plants have been evaluated and deemed adequate, except for the 50% WP formulation. For other formulations, field trials were performed representing the various conditions under which the pesticide can be applied. Geographical representation is adequate and a sufficient number of trials reflecting representative formulation classes were conducted.

To support multiple foliar applications of the 50% WP formulation (EPA Reg. No. 100-735) to strawberries, fruiting vegetables, and asparagus, the registrant must either (1) submit available bridging data for representative commodities which show that residues are similar for late season, foliar applications of WP and EC formulations of metalaxyl at rates similar to those registered for these crops, or (2) perform 3 side be side field trials each for asparagus, strawberries, and tomatoes (9 total trials) in geographically representative growing areas using the 50% WP formulation and a representative EC formulation. If residues resulting from application of the 50% WP are substantially higher than those using the EC formulation, then additional field trial data may be required. These data are considered confirmatory.

CBRS recommends that a tolerance for forage, fodder, and straw for the cereal grains group (excluding wheat, barley, and oats) be established.

GLN 171-4 (l): Magnitude of the Residue in Processed Food/Feed: Processing studies have been conducted on the following RACs: apples, citrus, cereal grains, cottonseeds, grapes, hops, legume vegetables, peanuts, pineapples, potatoes, prunes, sunflowers, soybeans, sugar beets, and tomatoes. All data requirements for magnitude of the residue data in processed food/feed commodities have been deemed adequate to determine the extent to which residues of metalaxyl concentrate upon processing of the raw agricultural commodity.

Residues concentrate in the following food commodities: citrus oil; potato granules/flakes, and chips; prunes; raisins; sugar beet molasses, and tomato puree.

Residues concentrate in the following processed feed items: apple pomace (wet); citrus, molasses and pulp; grape pomace (wet and dried), grape raisin waste; legume vegetable cannery waste; peanut meal; pineapple, process residue, potato peels (dried); soybean hulls and meal; sugar beet molasses, sunflower meal; and tomato pomace (dried).

Food/feed additive tolerances for potato granule/flakes, potato chips, and tomato pomace must be proposed.

Because CBRS now considers cotton gin byproducts and tomato paste processed food/feed commodities, CBRS now requires residue data on these matrices. The required data are considered confirmatory.

GLN 171-4 (j): Magnitude of the Residue in Meat, Milk, Poultry, and Eggs: Tolerances for the combined residues of metalaxyl and its metabolites convertible to 2,6-dimethyl aniline and N-(2-hydroxymethyl-6-methylphenyl)-N-(methoxyacetyl) alanine methyl ester have been established for meat, fat, kidney, liver, and meat byproducts of cattle, goats, horses, sheep and poultry and for milk and eggs. The evaluation of the submitted ruminant feeding studies is deferred until the adequacy of the analytical method used is determined.

The results from the submitted poultry feeding study indicate that residues of metalaxyl will not exceed the established tolerances in poultry tissues and eggs. However, judgement of the adequacy of the available data is reserved until the analytical method used is determined to be adequate and adequate storage stability data are provided.

There are no established or proposed direct animal uses for metalaxyl. The existing ruminant and poultry feeding studies are adequate for risk assessment.

GLN 165-1: Confined Rotational Crops: The registrant has submitted three confined rotational crop studies (MRID Nos. 42196501 through 42196503), which are under review.

GLN 165-2: Field Rotational Crops: Tolerances have been established for the indirect or inadvertent residues of metalaxyl in rotational crops resulting from the application of metalaxyl to the primary crops. A field rotational crop study (MRID No. 41870308) has been submitted and is under review.

Table A. Use patterns subject to reregistration for: Case 0081, Metalaxyl.

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Agricultural Crop Uses						
Alfalfa						
Soil broadcast application At-planting Ground or aerial equipment	50% WP [100-735] 2 lb/gal EC [100-607]	0.5 lb/A	(1)	Not applicable (NA)	12	Application may be made in a minimum of 20 gal/A. A 60-day PFI and PHI have been established. A 12-month plant-back interval has been established for corn and annual crops not registered for metalaxyl use. A 14-day plant-back interval has been established for barley, oats, and wheat.
Almond						
Soil band or broadcast application After planting (new plantings) or prior to spring plant growth (established plantings) Ground equipment	50% WP [100-735] 2 lb/gal EC [100-607]	4 lb/A	3	60	12	The grazing of livestock in treated areas and the grazing or feeding of cover crops grown in treated orchards are prohibited.

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Apple (bearing and nonbearing)						
Soil broadcast or band application Early spring (prior to tree growth) or fall (postharvest) Ground equipment	50% WP [100-735] 2 lb/gal EC [100-607]	4 lb/A	(2)	Not specified (NS)	12	Grazing or feeding of cover crops in treated orchards is prohibited.
Soil drench application Early spring (prior to tree growth) or fall (postharvest) Ground equipment		0.5 lb/100 gal				
Asparagus						
Broadcast application Postplant, before first cutting, or preharvest Ground or aerial equipment	50% WP [100-735] 2 lb/gal EC [100-607]	1 lb/A	(2)	NS	12	Application may be made in a minimum of 10 gal/A.
Avocado						
Soil application (under sprinkler or drip irrigation) At the beginning of the growing season or at transplanting Ground equipment	5% G [100-628]	0.075 oz/sq. yd or 1.4 oz/tree (>15 ft. diameter tree canopy)	3	90	12	A 28-day PHI has been established. A maximum yearly application rate of 12 lb ai/A is in effect.
Soil application (injected into or sprayed under irrigation water) At the beginning of the growing season or at transplanting Ground equipment	50% WP [100-735] 2 lb/gal EC [100-607]	1 oz/1,000 gal of irrigation water	3	90	12	

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Avocado (continued)						
Sleeve drench application At transplanting	50% WP [100-735] 2 lb/gal EC [100-607]	0.25 oz/18 gal [1 qt. solution per tree]	NS	NS	12	A 28-day PHI has been established. A maximum yearly application rate of 12 lb ai/A is in effect.
Bean, succulent or dried (see also "Legume vegetables.")						
Soil application At-planting Ground equipment	1% G [100-664 and 100-713]	0.12 oz/1,000 linear ft. of row	NS	NS	12	Feeding of vines or grazing of foliage by livestock is prohibited. A 12-month plant-back interval has been established for Brussels sprouts, corn, garlic, root crops, wheat, and other annual food/feed crops not registered for metalaxyl use.
Blueberry						
Soil band application Spring (prior to growth of established plantings) Ground equipment	50% WP [100-735] 2 lb/gal EC [100-607]	3.6 lb/A	2	NS	12	
Soil band or broadcast application At-planting or postplant (new plantings) Ground equipment		4 lb/A	3	60	12	A maximum seasonal application rate of 7.2 lb ai/A is in effect for new plantings before bearing harvestable fruit.

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Broccoli						
Soil band or broadcast application Preplant incorporated or at-planting Ground or aerial equipment	50% WP [100-735] 2 lb/gal EC [100-607]	2 lb/A	(1)	NA	12	Application may be made alone or as a tank mix with other fungicides. A 12-month plant-back interval has been established for corn and other annual food/feed crops not registered for metalaxyl use. A 14-day plant-back interval has been established for barley, oats, and wheat.
Soil broadcast application Preplant or at planting Ground equipment	2% G [100-676] 5% G [100-646]	1 lb/A	(1)	NA	NS	A 12-month plant-back interval has been established for other annual food/feed crops not registered for metalaxyl use.
Broadcast application Preplant or at planting Ground or aerial equipment	25% WP [100-717]	0.68 lb/A	NS	NS	12	
Broadcast foliar application Ground or aerial equipment	9% WP [100-658]	0.18 lb/A	4	14	48	A 7-day PHI has been established. A 12-month plant-back interval has been established for Brussels sprouts, celery, corn, garlic, mint, shallots, and other annual food/feed crops not registered for metalaxyl use. A 14-day plant-back interval has been established for barley, oats, and wheat.

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Broccoli (continued)						
Broadcast foliar application Ground or aerial equipment	2 lb/gal EC [AZ85000800] [CA85006800]	0.25 lb/A	4	14	24 (CA) NS (AZ)	Tank mix use limited to AZ and CA. A 7-day PHI has been established for CA.
Cabbage						
Soil band or broadcast application Preplant incorporated or at-planting Ground or aerial equipment	50% WP [100-735] 2 lb/gal EC [100-607]	2 lb/A	(1)	NA	12	See "Broccoli."
Soil broadcast application Preplant or at planting Ground equipment	2% G [100-676] 5% G [100-646]	1 lb/A	(1)	NA	NS	See "Broccoli."
Broadcast application Preplant or at planting Ground or aerial equipment	25% WP [100-717]	0.68 lb/A	NS	NS	12	
Broadcast application Foliar Ground or aerial equipment	9% WP [100-658]	0.18 lb/A	4	14	48	See "Broccoli."
	2 lb/gal EC [AZ85000800] [CA85006800]	0.25 lb/A	4	14	24	See "Broccoli."

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Carrot (see also "Root and tuber vegetables.")						
Broadcast foliar application Ground or aerial equipment	10% WP [100-720]	0.2 lb/A	4	14	48	A 7-day PHI has been established. A 12-month plant-back interval has been established for corn and other annual food/feed crops not registered for metalaxyl use. A 14-day plant-back interval has been established for barley, oats, and wheat.
Cauliflower						
Soil band or broadcast application Preplant incorporated or at-planting Ground or aerial equipment	50% WP [100-735] 2 lb/gal EC [100-607]	2 lb/A	(1)	NA	12	See "Broccoli."
Soil broadcast application Preplant or at planting Ground equipment	2% G [100-676] 5% G [100-646]	1 lb/A	(1)	NA	NS	See "Broccoli."
Broadcast application Preplant or at planting Ground or aerial equipment	25% WP [100-717]	0.68 lb/A	NS	NS	12	

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Cauliflower (continued)						
Broadcast foliar application Ground or aerial equipment	9% WP [100-658]	0.18 lb/A	4	14	48	See "Broccoli."
	2 lb/gal EC [AZ85000800] [CA85006800]	0.25 lb/A	4	14	24	See "Broccoli."
Chinese broccoli (gai lon)						
Soil band or broadcast application Preplant incorporated or at-planting Ground or aerial equipment	50% WP [100-735] 2 lb/gal EC [100-607]	2 lb/A	(1)	NA	12	See "Broccoli."
Broadcast foliar application Ground or aerial equipment	9% WP [100-658]	0.18 lb/A	4	14	48	See "Broccoli."
	2 lb/gal EC [AZ85000800] [CA85006800]	0.25 lb/A	4	14	24	See "Broccoli."
Chinese cabbage (tight heading varieties only)						
Soil band or broadcast application Preplant incorporated or at-planting Ground or aerial equipment	50% WP [100-735] 2 lb/gal EC [100-607]	2 lb/A	(1)	NA	12	See "Broccoli."

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Chinese cabbage (tight heading varieties only) (continued)						
Broadcast foliar application Ground or aerial equipment	9% WP [100-658]	0.18 lb/A	4	14	48	See "Broccoli."
	2 lb/gal EC [AZ85000800] [CA85006800]	0.25 lb/A	4	14	24	See "Broccoli."
Citrus fruit						
Soil band or broadcast application At-planting or transplanting Ground equipment	5% G [100-628]	4 lb/A	3	90	12[illegible]	Use limited to AZ, CA, FL, and PR. A maximum seasonal application rate of 12 lb ai/A is in effect.
	50% WP [100-735] 2 lb/gal EC [100-607]	4 lb/A (AZ and CA) 2 lb/A (FL and PR)				
Trunk spray application Ground equipment	50% WP [100-735] 2 lb/gal EC [100-607]	2 lb/3 gal (AZ, CA, and TX)	3	NS	NS	Use limited to AZ, CA, FL, and TX.
	2 lb/gal EC [FL89002300]	2 lb/15 gal (FL)				

(continued; footnotes follow.)

Table A *(continued)*.

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Citrus fruit (nonbearing)						
Soil band or broadcast application At-planting Ground equipment	2% G [100-676] 5% G [100-646] 25% WP [100-717] 50% WP [100-735] 2 lb/gal EC [100-607 and 100-619]	4 lb/A	3	90	NS	
Soil drench At-planting Ground equipment	25% WP [100-717] 50% WP [100-735] 2 lb/gal EC [100-607 and 100-619]	3.75 oz/1,000 linear ft. of row	3	90	NS	

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Citrus fruit (nonbearing) (continued)						
Water ring drench	2 lb/gal EC [100-607] 50% WP [100-735] 5% G [100-628]	1.5 oz/100 gal [5 gal/tree] (WP and EC) 0.075 oz/tree (G)	NS	NS	12	
Cotton						
Soil application At-planting Ground equipment	1% G [c] [100-664 [d] and 100-713]	0.1 lb/13,000 linear ft. of row	NS	NS	12	Feeding or grazing of cotton foliage by livestock is prohibited. A 12-month plant-back interval has been established for Brussels sprouts, corn, garlic, root crops, wheat, and other annual food/feed crops not registered for metalaxyl use.

(continued; footnotes follow.)

Table A *(continued)*.

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Cotton (continued)						
Soil in-furrow application At-planting Ground equipment	5% G [100-628] 50% WP [100-735] 2 lb/gal EC [100-607]	0.125 lb/13,000 linear ft. of row	NS	NS	12	For the G formulation a 12-month plant-back interval has been established for barley, corn, oats, wheat, and other annual food/feed crops not registered for metalaxyl use. For the EC and WP formulations a 12-month plant-back interval has been established for corn and other annual food/feed crops not registered for metalaxyl use and a 14-day plant-back interval has been established for barley, oats, and wheat.
Cranberry						
Soil broadcast application Fall (postharvest), spring, and preharvest Ground or aerial equipment	5% G [100-628] 2 lb/gal EC [100-607]	1.75 lb/A	3	NS	12	A 45-day PHI has been established. A maximum seasonal application rate of 5.25 lb ai/A is in effect.
Cucumber (see also "Cucurbit vegetables.")						
Soil broadcast application Preplant or at planting Ground equipment	2% G [100-676] 5% G [100-646]	1 lb/A	(1)	NA	NS	See "Broccoli."

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Cucumber (see also "Cucurbit vegetables.") (continued)						
Broadcast application Preplant or at planting Ground or aerial equipment	25% WP [100-717]	0.68 lb/A	NS	NS	12	
Broadcast foliar application At two-leaf stage of development Ground or aerial equipment	7% WP [100-749]	0.19 lb/A	4	7	24	A 5-day PHI has been established. Applications may be made alone or as a tank mix with other fungicides. A 12-month plant-back interval has been established for corn and other annual food/feed crops not registered for metalaxyl use. A 40-day plant-back interval has been established for barley, oats, and wheat.
Broadcast foliar application Ground or aerial equipment	10% WP [100-629]	0.2 lb/A	4	14	24	

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	*Min.* Retreatment Interval (Days)	*Restricted* Entry Interval (Hours)	Use Limitations [b]
Cucurbit vegetables [including cucumber; gherkin; balsam pear (bitter melon); cantaloupe; casaba; Chinese waxgourd (Chinese preserving melon); citron melon; crenshaw; edible gourds; honeyballs; honeydew melon; mango melon; muskmelon; Persian melon; watermelon; pumpkin; summer squash; winter squash; and cucurbit hybrids only]						
Soil band or broadcast application Preplant incorporated or at-planting Ground or aerial equipment	50% WP [100-735] 2 lb/gal EC [100-607]	2 lb/A	(1)	NA	12	A 12-month plant-back interval has been established for corn and other annual food/feed crops not registered for metalaxyl use. A 14-day plant-back interval has been established for barley, oats, and wheat.
Broadcast foliar application Ground and aerial equipment	9% WP [100-658]	0.27 lb/A	4	10	48	A 12-month plant-back interval has been established for Brussels sprouts, celery, corn, garlic, mint, shallots, and other annual food/feed crops not registered for metalaxyl use. A 14-day plant-back interval has been established for barley, oats, and wheat.
Broadcast foliar application Ground and aerial equipment	10% WP [100-720]	0.2 lb/A	4	14	48	A 5-day PHI has been established. A 12-month plant-back interval has been established for corn and other annual food/feed crops not registered for metalaxyl use. A 14-day plant-back interval has been established for barley, oats, and wheat.

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Eggplant						
Soil broadcast application Preplant or at planting Ground equipment	5% G [100-646]	1 lb/A	(1)	NA	NS	See "Broccoli."
Broadcast application Preplant or at planting Ground or aerial equipment	25% WP [100-717]	0.68 lb/A	NS	NS	12	
Soil band application At-planting Ground equipment	50% WP [100-735] 2 lb/gal EC [100-607]	2 lb/A	1	NA	12	A 7-day PHI has been established. A maximum seasonal rate of 3 lb ai/A is in effect. A 12-month plant-back interval has been established for corn and other annual food/feed crops not registered for metalaxyl use. A 14-day plant-back interval has been established for barley, oats, and wheat.
Directed spray application Postemergence Ground equipment		1 lb/A	2	30	12	
Fruit Trees (nonbearing)						
Soil broadcast application At-planting Ground equipment	2% G [100-676] 5% G [100-646]	8 lb/A	NS	90	NS	Application to plantings that will bear harvestable fruit within 12 months of the last application is prohibited.
	25% WP [100-717]	8.2 lb/A	NS	90	12	
	5% G [100-628]	4 lb/A	3	60	12	

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Fruit Trees (nonbearing) (continued)						
Soil band or broadcast application At-planting Ground equipment	50% WP [100-735] 2 lb/gal EC [100-607]	4 lb/A	NS	90	12	A maximum seasonal rate of 12 lb ai/A is in effect. Application to plantings that will bear harvestable fruit within 12 months of the last application is prohibited.
Soil broadcast application Nurserystock Ground equipment	2 lb/gal EC [100-619]	4 lb/A	NS	90	12	
Ginseng (see also "Root and tuber vegetables.")						
Soil broadcast application Prior to spring growth Ground equipment	5% G [100-628]	0.75 lb/A	5	30	12	A 9-day PHI has been established. A maximum seasonal rate of 3 lb ai/A is in effect.
Soil drench application Prior to spring growth Ground equipment	2 lb/gal EC [100-607]	0.75 lb/A	1	NA	12	
Grape						
Broadcast foliar application Prebloom, early bloom, late bloom, and cluster closing Ground or aerial equipment	10% WP [100-720]	0.2 lb/A	(4)	NS	48	A 66-day PHI has been established. A total of 0.6 lb ai/A may be applied postbloom following a prebloom application.

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Hops						
Soil application After pruning, but before training Ground equipment	50% WP [100-735]	0.5 lb/A	1	NA	12	The feeding of hop refuse to livestock is prohibited.
Soil drench application After pruning, but before training Ground equipment	2 lb/gal EC [100-607] [ID89000500] [OR89000800] [WA89001500]	0.5 lb/A	1	NA	12	A 45-day PHI has been established. A maximum of 3 applications (one drench and two foliar) may be made per season. Foliar applications are a tank mix use with copper fungicides.
Broadcast foliar application Ground equipment			2	NS		
Legume vegetables, succulent or dried [including bean: broad (fava), field, French, kidney, lima, mung, navy, pinto, runner, snap, and wax; chickpeas (garbanzo beans); lentil; lupine (sweet, white sweet, white, and grain); pea: field, garden, sugar, southern (black-eyed, catjang, cowpeas, and crowder); and edible soybeans]						
Soil incorporated treatment Preplant Ground equipment	50% WP [100-735] 2 lb/gal EC [100-607]	1 lb/A	(1)	NA	12	Applications to snap and dry beans may be made alone or as a tank mix. A 12-month plant-back interval has been established for corn and other annual food/feed crops not registered for metalaxyl use. A 14-day plant-back interval has been established for barley, oats, and wheat.
Soil band or broadcast application At-planting Ground or aerial equipment						
Lettuce						

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Soil broadcast application Preplant or at planting Ground equipment	2% G [100-676] 5%G [100-646]	1 lb/A	(1)	NA	NS	See "Broccoli."

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Lettuce (continued)						
Broadcast application Preplant or at planting Ground or aerial equipment	25% WP [100-717]	0.68 lb/A	NS	NS	12	
Lettuce, head						
Soil band or broadcast application Preplant incorporated, at-planting, or preemergence Ground equipment	5% G [100-628] 50% WP [100-735] 2 lb/gal EC [100-607]	2 lb/A	(1)	NA	12	For the G formulation a 12-month plant-back interval has been established for barley, corn, oats, wheat, and other annual food/feed crops not registered for metalaxyl use. For the EC and WP formulations a 12-month plant-back interval has been established for corn and other annual food/feed crops not registered for metalaxyl use. A 14-day plant-back interval has been established for barley, oats, and wheat.
Broadcast foliar application Ground or aerial equipment	2 lb/gal EC [AZ86001500] [CA86001800] [CO88000100] [FL86000200] [TX91001100] [WA87000200]	0.25 lb/A	2	NS (AZ, CO, and WA) 14 (CA, FL, and TX)	NS	Use limited to AZ, CA, CO, FL, TX, and WA. Tank mix use. Application may be made in 25-100 gal/A by ground or in 5-10 gal/A by air. A 10-day PHI has been established for CA, CO, and WA and a 7-day PHI has been established for TX.

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Melon (including cantaloupe, casaba, crenshaw, honeydew, and watermelon) (see also "Cucurbit vegetables.")						
Soil broadcast application Preplant or at planting Ground equipment	2% G [100-676] 5% G [100-646]	1 lb/A	(1)	NA	NS	See "Broccoli."
Broadcast application Preplant or at planting Ground or aerial equipment	25% WP [100-717]	0.68 lb/A	NS	NS	12	
Broadcast foliar application At two-leaf stage of development Ground or aerial equipment	7% WP [100-749]	0.19 lb/A	4	7	24	See "Cucumber."
Broadcast application Foliar Ground or aerial equipment	10% WP [100-629]	0.2 lb/A	4	14	24	See "Cucumber."
Nut Trees (nonbearing)						
Soil broadcast application At-planting Ground equipment	2% G [100-676] 5% G [100-646]	8 lb/A	NS	90	NS	See "Fruit Trees (nonbearing)."
	25% WP [100-717]	8.2 lb/A	NS	90	12	
	5% G [100-628]	4 lb/A	3	60	12	

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Nut Trees (nonbearing) (continued)						
Soil band or broadcast application At-planting Ground equipment	50% WP [100-735] 2 lb/gal EC [100-607]	4 lb/A	NS	90	12	See "Fruit Trees (nonbearing)."
Soil broadcast application Nurserystock Ground equipment	2 lb/gal EC [100-619]	4 lb/A	NS	90	12	See "Fruit Trees (nonbearing)."
Onion, bulb (including onions grown for seed)						
Soil band or broadcast application Preplant incorporated or at-planting Ground or aerial equipment	50% WP [100-735] 2 lb/gal EC [100-607]	1 lb/A	(1)	NA	12	A 12-month plant-back interval has been established for corn and other annual food/feed crops not registered for metalaxyl use. A 14-day plant-back interval has been established for barley, oats, and wheat.
Broadcast foliar application Ground or aerial equipment	10% WP [100-629]	0.2 lb/A	4	14	24	A 7-day PHI has been established. Applications may be made alone or as a tank mix with other fungicides. A 12-month plant-back interval has been established for corn and other annual food/feed crops not registered for metalaxyl use. A 40-day plant-back interval has been established for barley, oats, and wheat.
	7% WP [100-749]	0.19 lb/A	4	7	24	

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Onion, bulb (including onions grown for seed) (continued)						
Broadcast foliar application Ground or aerial equipment	9% WP [100-658]	0.18 lb/A	4	7	48	A 7-day PHI has been established. A 12-month plant-back interval has been established for Brussels sprouts, celery, corn, garlic, mint, shallots, and other annual food/feed crops not registered for metalaxyl use. A 14-day plant-back interval has been established for barley, oats, and wheat.
Onion, green (including green onions, leeks, spring onions, scallions, Japanese bunching onions, green shallots, and green eschalots)						
Soil band or broadcast application Preplant incorporated or at-planting Ground or aerial equipment	50% WP [100-735] 2 lb/gal EC [100-607]	1 lb/A	(1)	NA	12	See "Onions, bulb (including onions grown for seed)."
Broadcast foliar application Ground or aerial equipment	9% WP [100-658]	0.18 lb/A	3	7	48	A 21-day PHI has been established. A 12-month plant-back interval has been established for Brussels sprouts, celery, corn, garlic, mint, shallots, and other annual food/feed crops not registered for metalaxyl use. A 14-day plant-back interval has been established for barley, oats, and wheat.

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Papaya						
Soil drench application Seedling (nurserystock) Ground equipment	50% WP [100-735] 2 lb/gal EC [100-607]	3.4 lb/A	2	30	12	Use limited to HI. A 90-day PHI has been established.
Soil broadcast application At transplanting Ground or aerial equipment		3.5 lb/A	2	14	12	
Peanut						
Soil band application At-planting Ground equipment	1% G [100-664 and 100-713]	0.25 lb/14,520 linear ft. of row	NS	NS	12	The feeding or grazing of peanut foliage or harvest residues by livestock is prohibited. A maximum seasonal rate of 1 lb ai/14,520 linear ft. of row is in effect. A 12-month plant-back interval has been established for Brussels sprouts, corn, garlic, root crops, wheat, and other annual food/feed crops not registered for metalaxyl use.
Soil band application At early pegging Ground equipment		1 lb/14,520 linear ft. of row	NS	NS	12	

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Peanut (continued)						
Soil band or in-furrow application At-planting Ground equipment	.5% G [100-628]	0.25 lb/A (based on 42-inch rows)	NS	NS	12	A 12-month plant-back interval has been established for barley, corn, oats, wheat, and other annual food/feed crops not registered for metalaxyl use.
Soil band application At early pegging Ground equipment		0.5 lb/12,400 linear ft. of row	NS	NS	12	
Soil band or in-furrow application At-planting Ground equipment	50% WP [100-735] 2 lb/gal EC [100-607]	0.25 lb/A	NS	NS	12	A 12-month plant-back interval has been established for corn and other annual food/feed crops not registered for metalaxyl use. A 14-day plant-back interval has been established for barley, oats, and wheat.
Soil application At early pod set or pegging Irrigation equipment		1 lb/A	NS	NS	12	
Pepper						
Soil broadcast application Preplant or at planting Ground equipment	5% G [100-646]	1 lb/A	(1)	NA	NS	See "Broccoli."

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Pepper (continued)						
Broadcast application Preplant or at planting Ground or aerial equipment	25% WP [100-717]	0.68 lb/A	NS	NS	12	
Soil band application At-planting Ground equipment	50% WP [100-735] 2 lb/gal EC [100-607]	2 lb/A	1	NA	12	See "Eggplant."
Directed spray application Postemergence Ground equipment		1 lb/A	2	30	12	
Broadcast foliar application Ground or aerial equipment	10% WP [100-720]	0.25 lb/A	4	10	48	A 7-day PHI has been established. A maximum seasonal rate of 3 lb ai/A is in effect. A 12-month plant-back interval has been established for corn and other annual food/feed crops not registered for metalaxyl use. A 14-day plant-back interval has been established for barley, oats, and wheat.
Pineapple						
Seedpiece dip (crown dip) treatment Preplant	50% WP [100-735] 2 lb/gal EC [100-607]	1 lb/100 gal [100 gal of dip solution per planted acre]	NA	NA	NA	If crop failure occurs within one year of planting treated crowns, the use of crop or crop residue for animal feed is prohibited.

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Potato						
Broadcast foliar application Ground or aerial equipment	10% WP [100-720]	0.25 lb/A	4	14	48	A 7-day PHI has been established. A 12-month plant-back interval has been established for corn and other annual food/feed crops not registered for metalaxyl use. A 14-day plant-back interval has been established for barley, oats, and wheat.
	7% WP [100-749]	0.16 lb/A	4	14	24	A 3-day PHI has been established for CT, DE, FL, ME, MA, MI, NH, NY, OH, PA, RI, VT, and WI. A 14-day PHI has been established for all other states. Applications may be made alone or as a tank mix with other fungicides. A 12-month plant-back interval has been established for corn and other annual food/feed crops not registered for metalaxyl use. A 40-day plant-back interval has been established for barley, oats, and wheat.
	10% WP [100-629]	0.2 lb/A				

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Potato (continued)						
Broadcast foliar application Ground or aerial equipment	10% WP [ME92000200] [ND92000200]	0.2 lb/A	4	14	NS	Use limited to ME and ND. A 7-day PHI has been established. Only sweet corn, corn grown for grain or feed where the corn and cob are ground together may be rotated the spring following the last application of metalaxyl to potatoes. Grazing or feeding forage or fodder from rotational corn to livestock is prohibited.
	9% WP [100-658]	0.18 lb/A	4	14	48	A 7-day PHI has been established. A 12-month plant-back interval has been established for Brussels sprouts, celery, corn, garlic, mint, shallots, and other annual food/feed crops not registered for metalaxyl use. A 14-day plant-back interval has been established for barley, oats, and wheat.
Radish (see also "Root and tuber vegetables.")						
Broadcast foliar application Ground or aerial equipment	10% WP [100-720]	0.2 lb/A	4	14	48	See "Carrot."

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Radish (grown for seed)						
Broadcast foliar application After bolting Ground or aerial equipment	10% WP [WA92004200]	0.2 lb/A	2	14	NS	Use limited to WA. Applications may be made in a minimum of 30 gal/A using ground equipment and 10 gal/A using aerial equipment. The feeding or grazing of radish forage or fodder and the cutting of radish tops for hay or forage are prohibited. The use of any portion of the treated field, including seed, seed screenings, hay, forage, or stubble for human or animal consumption is prohibited.
Raspberry						
Soil band application Spring and fall (postharvest) Ground equipment	5% G [100-628] 50% WP [100-735] 2 lb/gal EC [100-607]	0.25 lb/1,000 linear ft. of row [3.6 lb/A on broadcast basis of G formulation]	2	NS	12	A 45-day PHI has been established.
Rice						
Soil broadcast application Preplant/preflooding Ground or aerial equipment	2 lb/gal EC [LA92000400] [c]	0.5 lb/A	(1)	NA	NS	Use limited to LA. Applications may be made in a minimum of 20 gal/A using ground equipment and 5-10 gal/A using aerial equipment.

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Root and tuber vegetables [including artichoke (Jerusalem); beet (sugar and table); carrot; cassava; chicory; ginger; ginseng; horseradish; parsnip; radish; rutabaga; salsify; sweet potato; turnip; and yam]						
Soil band or broadcast application Preplant incorporated or at-planting Ground or aerial equipment	50% WP [100-735] 2 lb/gal EC [100-607]	2 lb/A	(1)	NA	12	Application to potato is prohibited.
Soybean						
Soil band or in-furrow application At-planting Ground equipment	5% G [100-628] 50% WP [100-735] 2 lb/gal EC [100-607]	0.3 oz/1,000 linear ft. of row	(1)	NA	12	See "Cotton."
Soil band or broadcast application At-planting Ground or aerial equipment	50% WP [100-735] 2 lb/gal EC [100-607]	1.25 lb/A	(1)	NA	12	

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Spinach						
Soil broadcast application Preplant or at planting Ground equipment	2% G [100-676] 5% G [100-646]	1 lb/A	(1)	NA	NS	See "Broccoli."
Soil incorporated treatment Preplant Ground equipment	5% G [100-628] 50% WP [100-735] 2 lb/gal EC [100-607]	2 lb/A	(1)	NA	12	A 21-day PHI has been established. Two additional sidedress applications may be made at 0.25 lb ai/A/application. For the G formulation a 12-month plant-back interval has been established for barley, corn, oats, wheat, and other annual food/feed crops not registered for metalaxyl use. For the EC and WP formulations a 12-month plant-back interval has been established for corn and other annual food/feed crops not registered for metalaxyl use and a 14-day plant-back interval has been established for barley, oats, and wheat.
Soil band or broadcast application At-planting/preemergence Ground or aerial equipment						
Broadcast application Preplant or at planting Ground or aerial equipment	25% WP [100-717]	0.68 lb/A	NS	NS	12	

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Spinach (continued)						
Soil band or broadcast application At-planting (fall) and breaking dormancy (late winter) Ground equipment	5% G [AR90000502] [OK90000500] 2 lb/gal EC [AR90000501] [OK90000500]	0.5 lb/A	2	NS	NS	Use limited to AR and OK. A maximum seasonal rate of 1 lb ai/A is in effect. A 21-day PHI has been established.
Broadcast foliar application Ground or aerial equipment	10% WP [100-720]	0.25 lb/A	2	14	48	A 21-day PHI has been established. A 12-month plant-back interval has been established for corn and other annual food/feed crops not registered for metalaxyl use. A 14-day plant-back interval has been established for barley, oats, and wheat.
Squash (see also "Cucurbit vegetables.")						
Soil broadcast application Preplant or at planting Ground equipment	2% G [100-676] 5% G [100-646]	1 lb/A	(1)	NA	NS	See "Broccoli."
Soil broadcast application Preplant or at planting Ground equipment	25% WP [100-717]	0.68 lb/A	NS	NS	12	
Broadcast foliar application At two-leaf stage of development Ground or aerial equipment	7% WP [100-749]	0.19 lb/A	4	7	24	See "Cucumber."

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Squash (see also "Cucurbit vegetables.") (continued)						
Broadcast foliar application Ground or aerial equipment	10% WP [100-629]	0.2 lb/A	4	14	24	See "Cucumber."
Stone fruits [including apricots; cherries (sweet and sour); nectarines; peaches; plums (Chickasaw, Damson, Japanese); and prunes]						
Soil band or broadcast application After planting (new plantings) or prior to spring plant growth (established plantings) Ground equipment	50% WP [100-735] 2 lb/gal EC [100-607]	4 lb/A	3	60	12	See "Almond."
Strawberry						
Soil band or broadcast application Post-transplant, prebloom, preharvest, or postharvest Ground or irrigation equipment	50% WP [100-735] 2 lb/gal EC [100-607] [CA90004700]	1 lb/A	3	NS	12	A maximum seasonal rate of 3 lb ai/A is in effect.
Soil broadcast application Postplant (nurserystock)	2 lb/gal EC [CA82002400]	1 lb/A	2	30	NS	A maximum seasonal rate of 2 lb ai/A is in effect.

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Sugar beet (see also "Root and tuber vegetables.")						
Soil band or broadcast application Preplant incorporated or at-planting Ground equipment	5% G [100-628]	2 lb/A	(1)	NA	12	
Broadcast foliar application Ground or aerial equipment	10% WP [100-629]	0.2 lb/A	4	14	24	A 14-day PHI has been established. The feeding of treated tops to livestock is prohibited.
Tobacco						
Soil broadcast application Preplant or at-planting (plant bed) Ground equipment	50% WP [100-735] 2 lb/gal EC [100-607]	0.5 lb/A	(1)	NA	12	Application may be made in 50 gal/A. In PA, 1 lb ai/A may be used.
Soil incorporated treatment Pretransplant Ground equipment		3 lb/A	(1)	NA	12	In PA, the application rate of 3 lb ai/A is prohibited.
Tomato						
Soil broadcast application Preplant or at-planting Ground equipment	2% G [100-676] 5% G [100-646]	1 lb/A	(1)	NA	NS	See "Broccoli."
	25% WP [100-717]	0.68 lb/A	NS	NS	12	

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Tomato (continued)						
Soil band application At-planting Ground equipment	5% G [100-628]	1 lb/A	NS	NS	12	A 7-day PHI has been established. Two additional applications may be made at 0.5 lb ai/A. A maximum seasonal rate of 2 lb ai/A is in effect. A 12-month plant-back interval has been established for barley, corn, oats, wheat, and other annual food/feed crops not registered for metalaxyl use.
Soil band application At-planting Ground equipment	50% WP [100-735] 2 lb/gal EC [100-607]	2 lb/A	NS	NS	12	A 7-day PHI has been established for the WP formulation. A maximum seasonal rate of 3 lb ai/A is in effect. A 12-month plant-back interval has been established for corn and other annual food/feed crops not registered for metalaxyl use. A 14-day plant-back interval has been established for barley, oats, and wheat.
Directed soil or soil injection application Postplant Ground equipment		1 lb/A	2	NS	12	

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Tomato (continued)						
Broadcast foliar application Ground or aerial equipment	7% WP [100-749]	0.19 lb/A (east of the Mississippi) 0.16 lb/A (west of the Mississippi)	4	7	24	A 5-day PHI has been established. Applications may be made alone or as a tank mix with other fungicides. A 12-month plant-back interval has been established for corn and other annual food/feed crops not registered for metalaxyl use. A 40-day plant-back interval has been established for barley, oats, and wheat.
	10% WP [100-629]	0.2 lb/A	4	14	24	
Broadcast foliar application Ground or aerial equipment	9% WP [100-658]	0.27 lb/A	4	10	48	A 7-day PHI has been established. A 12-month plant-back interval has been established for Brussels sprouts, celery, corn, garlic, mint, shallots, and other annual food/feed crops not registered for metalaxyl use. A 14-day plant-back interval has been established for barley, oats, and wheat.

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Broadcast foliar application Ground or aerial equipment	10% WP [100-720]	0.25 lb/A	NS	5	48	A 7-day PHI has been established. A maximum seasonal rate of 3 lb ai/A is in effect. A 12-month plant-back interval has been established for corn and other annual food/feed crops not registered for metalaxyl use. A 14-day plant-back interval has been established for barley, oats, and wheat.

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Walnut						
Soil band or broadcast application After planting (new plantings) or prior to spring plant growth (established plantings) Ground equipment	50% WP [100-735] 2 lb/gal EC [100-607]	4 lb/A	3	60	12	See "Almond."

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Seed Treatments						
Beet (table/garden)						
Seed treatment (domestic use) Slurry	25% WP [100-639] 50% WP [100-738] 3 lb/gal FlC [100-684]	0.5 oz/cwt	NA	NA	None	
Cotton (acid delinted and machine delinted)						
Seed treatment (domestic use) Slurry	25% WP [100-639] 50% WP [100-738] 3 lb/gal FlC [100-684]	0.5 oz/cwt	NA	NA	None	
Corn (sweet)						
Seed treatment (domestic use) Slurry	25% WP [100-639] 50% WP [100-738] 3 lb/gal FlC [100-684]	1 oz/cwt	NA	NA	None	

(continued; footnotes follow.)

Table A *(continued)*.

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Corn [field and pop (including forage and fodder)]						
Seed treatment (domestic use) Slurry	25% WP [100-639] 50% WP [100-738] 3 lb/gal FlC [100-684]	0.5 oz/cwt	NA	NA	None	
Corn						
Seed treatment (export use) Slurry	25% WP [100-639] 50% WP [100-738] 3 lb/gal FlC [100-684]	3.5 oz/cwt (WP) 3.75 oz/cwt (FlC)	NA	NA	None	Use of seed for feed, food, or oil purposes is prohibited.
Dill						
Seed treatment (domestic use) Slurry	3 lb/gal FlC [100-684]	0.5 oz/cwt	NA	NA	None	

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Forage grasses (hay and silage)						
Seed treatment (domestic use) Slurry	25% WP [100-639] 50% WP [100-738] 3 lb/gal FlC [100-684]	0.5 oz/cwt	NA	NA	None	
Forage legumes [alfalfa, bean forage, clover, cowpea forage and hay, lespedeza, pea forage, pea vine hay, soybean forage and hay, trefoil, velvet bean forage, and vetch]						
Seed treatment (domestic use) Slurry	25% WP [100-639] 50% WP [100-738] 3 lb/gal FlC [100-684]	0.5 oz/cwt	NA	NA	None	
Grain crops [barley, buckwheat, corn: field, sweet, and pop, millet, oats, rice, rye, triticale, and wheat (including forage and fodder)]						
Seed treatment (domestic use) Slurry	25% WP [100-639] 50% WP [100-738] 3 lb/gal FlC [100-684]	0.5 oz/cwt	NA	NA	None	

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Legume vegetables [beans (field, green, kidney, lima, navy, pole, snap, string, and wax); chick peas (garbanzo beans); cowpeas; lentils; lupines; peas (black-eyed, field, and garden); and edible soybeans]						
Seed treatment (domestic use) Slurry	25% WP [100-639] 50% WP [100-738] 3 lb/gal FlC [100-684]	0.5 oz/cwt	NA	NA	None	
Okra						
Seed treatment (domestic use) Slurry	25% WP [100-639] 50% WP [100-738] 3 lb/gal FlC [100-684]	0.5 oz/cwt	NA	NA	None	
Millet						
Seed treatment (domestic use) Slurry	25% WP [100-639] 50% WP [100-738] 3 lb/gal FlC [100-684]	0.5 oz/cwt	NA	NA	None	

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Millet (continued)						
Seed treatment (export use) Slurry	25% WP [100-639] 50% WP [100-738] 3 lb/gal FlC [100-684]	3.5 oz/cwt (WP) 3.75 oz/cwt (FlC)	NA	NA	None	Use of seed for feed, food, or oil purposes is prohibited.
Pea						
Seed treatment (domestic use) Slurry	25% WP [100-639] 50% WP [100-738] 3 lb/gal FlC [100-684]	1.25 oz/cwt (WP) 1.4 oz/cwt (FlC)	NA	NA	None	
Seed treatment (export use) Slurry	35% WP [CA85007300] [ID83003300] [WA83003500]	1.12 oz/cwt	NA	NA	None	Use limited to CA, ID, and WA for export only. Use of seed for feed, food, or oil purposes is prohibited.
	35% WP [WA90003300]	1.1375 oz/cwt				
	45% WP [CA87000700] [ID86001900] [WA86002800]	1.125 oz/cwt	NA	NA	None	

(continued; footnotes follow.)

Table A *(continued)*.

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Pea (continued)						
Seed treatment (export use) Slurry	25% WP [100-639] 50% WP [100-738]	0.5 oz/cwt	NA	NA	None	Use of seed for feed, food, or oil purposes is prohibited.
Sorghum						
Seed treatment (domestic use) Slurry	25% WP [100-639] 50% WP [100-738] 3 lb/gal FlC [100-684]	1 oz/cwt	NA	NA	None	
Seed treatment (domestic use) Slurry	2 lb/gal EC [100-626]	0.5 oz/cwt	NA	NA	None	Use of seed for feed, food, or oil purposes is prohibited.
Seed treatment (export use) Slurry	25% WP [100-639] 50% WP [100-738] 3 lb/gal FlC [100-684]	3.5 oz/cwt (WP) 3.75 oz/cwt (FlC)	NA	NA	None	Use of seed for feed, food, or oil purposes is prohibited.

(continued; footnotes follow.)

Table A *(continued).*

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Soybean						
Seed treatment (domestic use) Slurry	25% WP [100-639] 50% WP [100-738] 2 lb/gal EC [100-626] 3 lb/gal FlC [100-684]	0.5 oz/cwt	NA	NA	None	EC formulation: Use of seed for feed, food, or oil purposes is prohibited.
Sugar beet						
Seed treatment (domestic use) Slurry	25% WP [100-639] 50% WP [100-738] 3 lb/gal FlC [100-684]	0.5 oz/cwt	NA	NA	None	

(continued; footnotes follow.)

Table A *(continued)*.

Site Application Type Application Timing Application Equipment	Formulation [EPA Reg. No.]	Max. Single Application Rate (ai)	Max. # Apps. [a]	Min. Retreatment Interval (Days)	Restricted Entry Interval (Hours)	Use Limitations [b]
Sunflower						
Seed treatment (domestic use) Slurry	25% WP [100-639] 50% WP [100-738] 2 lb/gal EC [100-626] 3 lb/gal FlC [100-684]	1 oz/cwt	NA	NA	None	EC formulation: Use of seed for feed, food, or oil purposes is prohibited.
Seed treatment (export use) Slurry	25% WP [100-639] 50% WP [100-738] 3 lb/gal FlC [100-684]	3.5 oz/cwt (WP) 3.75 oz/cwt (FlC)	NA	NA	None	Use of seed for feed, food, or oil purposes is prohibited.

[a] Label instructions imply a maximum number of applications but it is not strictly stated; the implied number of applications is indicated in parentheses.

[b] PHI = preharvest interval and PFI = prefeeding interval.

[c] CBRS considers the feeding restrictions for cotton forage to livestock impractical. This feeding restriction must be removed from the use limitations for cotton on the EPA Reg. Nos. 100-664 and 100-713 labels. The registrant must amend the labels for the 1% G formulations (EPA Reg. Nos. 100-664 and 100-713).

[d] The 1% G formulation [EPA Reg. No. 100-664] product label should be amended to list lb of product/13,000 linear ft. of row instead of lb of product/linear ft. of row.

[e] Revised label for SLN No. LA92000400 must be submitted with the following restrictions: When using this product as directed in making a direct soil application at-planting to water seeded rice, do not use Apron®-treated rice seed or any other rice seed that has been treated with metalaxyl (CBTS Nos. 11708 and 11709, DP Barcodes D189772 and D189764, 5/5/93, F. Griffith).

Table B. Residue Chemistry Science Assessments for Reregistration of Metalaxyl.

GLN: Data Requirements	Current Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References [1]
171-3: Directions for Use	N/A	No[2]	
171-4 (a): Plant Metabolism	N/A	No	*00071601 00071602* 00071603 00071604 *00071605* 00071606 00071607 00071608 00071609 00071610 00114379 00128102
171-4 (b): Animal Metabolism	N/A	Yes[3]	*00071611 00071612* **41664503 41664504 41664505 41664506** 42115801[4] 42115802[4] 421158034 42115804[4] 42115805[4] 42115806[4]
171-4 (c/d): Residue Analytical Methods	N/A	No	00071622 00071623 00071676 *00104378* 00104656 00148440 00157480 **40503101 41055203 41689701 41689702** 42115809[4] 42115810[4] 42115807[4] 42115808[4]
171-4 (e): Storage Stability	N/A	Yes[5]	00148440 40106601[6] 41449001[7] 42021101[8] 42115809[4] 42350101[9] 42919401[5] 41912902[10]
171-4 (k): Magnitude of the Residue in Plants			
Root and Tuber Vegetables Group	0.5 [§180.408(a)]	No[11]	40838301[12] 40838302[12] 40838303[12]
- Beets	0.1 [§180.408(a)]	No[13]	00128102
- Ginseng	3.0 [§180.408(a)]	No	41688900[14] 41688901[14]
- Potatoes	0.5 [§180.408(a)]	No[11]	*00104654* 00071616 00098428[15]
- Sugar beets	0.1 [§180.408(a)]	No[13]	00128102
	0.5 (roots) [§180.408(a)][11]	No	40569301[16]
Leaves of Root and Tuber Vegetables Group	15.0 [§180.408(a)]	No	40838301[12] 40838302[12] 40838303[12]
- Beet, tops	0.1 [§180.408(a)]	No[13]	00128102
- Sugar beet, tops	10.0 [§180.408(a)]	No[13]	40569301[16]

(continued; footnotes follow)

Table B *(continued)*.

GLN: Data Requirements	Current Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References [1]
Bulb Vegetables Group			
- Onions, dry bulb	3.0 [§180.408(a)]	No	00071615 00098428 00130694 00148103
- Onions, green	10.0 [§180.408(a)]	No	00071615 00098428 00130694
Leafy Vegetables (Except Brassica Vegetables) Group	0.1 [§180.408(a)]	No[17]	41587801[18] 42021101[17]
- Lettuce, head	5.0 [§180.408(a)]	No[17]	00071615 00097511 00114377 00103695 40775801[19]
- Spinach	10.0 [§180.408(a)]	No	00071672 00114378 00130695 40790201[20] 41636201[21]
Brassica (Cole) Leafy Vegetables Group			
- Brassica (cole) leafy vegetable group [except broccoli, cabbage, and cauliflower]	0.1 [§180.408(a)]	No[22]	
- Broccoli	2.0 [§180.408(a)]	No	00071615 00130773
- Cabbage	2.0 [§180.408(a)]	No[22]	00071615 00130773
- Cauliflower	2.0 [§180.408(a)]	No[22]	00071615 00130773
Legume Vegetables Group			
- Legume vegetables group	0.2 [§180.408(a)]	No[23]	00129003 **40569303**
- Soybean, grain	1.0 [§180.408(a)]	No	00071672 00104390 00148440
Foliage of Legume Vegetables Group	8.0 [§180.408(a)]	No	00129003 00071672 00104390 00148440 **40569303**
Fruiting Vegetables (Except Cucurbits) Group	1.0 [§180.408(a)]	Yes[24]	00148103 00148440 00157480
Cucurbit Vegetables Group	1.0 [§180.408(a)]	No	00071615 00098428 00130693 00148103
Citrus Fruits Group	1.0 [§180.408(a)]	No	00117969 00133020 00148440
Pome Fruits Group			
- Apples	0.2 [§180.408(a)]	No	00126315 00141519
Stone Fruits Group	1.0 [§180.408(a)]	No	00164650[25]
Small Fruits and Berries Group			
- Blueberries	2.0 [§180.408(a)]	No	00164649[25]

(continued; footnotes follow)

Table B *(continued)*.

GLN: Data Requirements	Current Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References [1]
- Cranberries	4.0 [§180.408(a)]	No	41996401[26]
- Grapes	2.0 [§180.408(a)]	No	00138818[27] 00155845[27] 41150101[28]
- Raspberries	0.5 [§180.408(a)]	No	00127769
- Strawberries	10.0 [§180.408(a)]	Yes[29]	00155237[30] 40880401[31]
Tree Nuts Group			
- Almonds	0.5 (nutmeats) 10.0 (hulls) [§180.408(a)]	No	00164651[25]
- Walnuts	0.5 [§180.408(a)]	No	00164651[25]
Cereal Grains Group			
- Grain, crops	0.1 [§180.408(a)]	No[32]	00071672 00104387 00128102 **41689701** **41689702** 41870301[33]
Forage, Fodder and Straw of Cereal Grains Group (except wheat, barley, and oats)	None	No[32]	00128102 **41689701** **41689702** 41870301[33] 41870305[33] 41912903[34]
Grass Forage, Fodder, and Hay Group			
- Grasses, forage	0.1 [§180.408(a)]	No[35]	
Non-grass Animal Feeds Group	none	No[36]	
- Alfalfa	6.0 (forage) 20.0 (hay) [§180.408(a)]	No No	40832901[37]
Miscellaneous Commodities			
- Asparagus	7.0 [§180.408(a)]	Yes[38]	00154446[38]
- Avocados	4.0 [§180.408(a)]	No	00074488
- Cottonseed	0.1 [§180.408(a)]	Yes[39]	00109402 41870305[33]
- Hops, green	2.0 [§180.408(a)]	No[40]	00079433 40746901[41] 40909401[42]
- Papaya	0.1 [§180.408(c)]	No	40490501[43]
- Peanut	0.2 (nutmeats) 20.0 (vines) 20.0 (hay) 2.0 (hulls) [§180.408(a)]	No No[44] No No	00128738 41870306[45] 42498701[46]

(continued)

Table B *(continued)*.

GLN: Data Requirements	Current Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References [1]
- Pineapples	0.1 (fruit) 0.1 (fodder) 0.1 (forage) [§180.408(a)]	No No[47] No[47]	00109472
- Sunflowers	0.1 (seeds) 0.1 (forage) [§180.408(a)]	No No	00128102 4191290210
- Tobacco	N/A	No	00100467 00100476 00100477 00100478 00104485 00140371 00148440 42196503
171-4(l): Magnitude of the Residue in Processed Food/Feed			
- Apples	2.0 (pomace, dry) 0.4 (pomace, wet) [§186.4000 (a)]	No[48] No	00126315
- Citrus	7.0 (oil) [§185.4000 (a)] 7.0 (molasses) 7.0 (pulp) [§186.4000 (a)]	No No No	00117969
- Cereal grains group (except wheat, barley, and oats)	None	No	41870301[33] 41870302[33] 41870303[33] 42498701[49] 42259805[50]
- Cottonseed	None (cotton gin bypdts)	Yes[39]	
- Grapes	6.0 (raisins) [§185.4000 (a)] 10.0 (raisin waste) 10.0 (pomace, dry) 10.0 (pomace, wet) [§186.4000 (a)]	No	00138818[27] 00155845[27] 41150101[28]
- Hops	20.0 (dried) [§185.4000 (d)] 2.0 (dry) 20.0 (spent) [§186.4000 (d)]	No[40] No[40] No[40]	00079433 40746901 40909401
- Peanut	1.0 (meal) 2.0 (soapstock) [§186.4000 (a)]	No No[51]	00128738
- Pineapples	None	No[52]	42233501[52]

(continued; footnotes follow)

Table B *(continued)*.

GLN: Data Requirements	Current Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References [1]
- Potatoes	4.0 (processed, including potato chips) [§185.4000 (a)] 4.0 (waste, dried, processed) [§186.4000 (a)]	No[53]	41870307[54]
- Prunes (dried)	4.0 [§185.4000 (a)]	No	00164650[25]
- Soybean	2.0 (hulls) 2.0 (meal) 2.0 (soapstock) [§186.4000 (a)]	No No No[55]	00071672
- Sugar beet	1.0 (molasses) [§186.4000 (a)]	No[56]	401066016 40569301[57]
- Sunflower	None	No[58]	41870304[59] 42498701[60]
- Tomatoes	20.0 (pomace, dry and wet) [§186.4000 (a)] 3.0 (processed) [§185.4000 (a)]	Yes[61]	00148440 00157480
171-4 (j): Magnitude of the Residue in Meat, Milk, Poultry, and Eggs			
- Fat, kidney, and liver of cattle, goats, hogs, horses, poultry, and sheep	0.4 [§180.408 (a)]	Reserved	00100753 42115809[4] 00071673 00071674
- Meat and meat byproducts (except kidney and liver) of cattle, goats, hogs, horses, poultry, and sheep	0.05 [§180.408 (a)]	Reserved	00100753 42115809[4] 00071673 00071674
- Eggs	0.05 [§180.408 (a)]	Reserved	00071673 42115809[4]
- Milk	0.02 [§180.408 (a)]	Reserved	00071674
165-1: Rotational Crops (Confined)		Reserved	42196501[62] 42196502[62] 42196503[62]
165-2: Rotational Crops (Field)		Reserved	41870308[63]
- Barley, oat, and wheat	2.0 (forage, fodder, and straw) [§180.408 (b)]		00114376 00071672 00104387
	0.2 (grain) [§180.408 (b)]		00114376 00071672 00104387
	1.0 (milling fractions) [§185.4000 (b) and §186.4000 (b)]		00114376

(continued; footnotes follow)

Table B (*continued*).

1. **Bolded** references were reviewed in the Update of 3/13/91. Unbolded references were reviewed in the Residue Chemistry Science Chapter (6/22/87) of the Metalaxyl Final Reregistration Standard and Tolerance Reassessment (FRSTR) (Guidance Document date 9/88). *Italicized* references were reviewed in the 12/81 Registration Standard. Otherwise, references were reviewed as noted.

2. A revised label for SLN No. LA920004 must be submitted with the following restriction: When using this product as directed in making a direct soil application at planting to water seeded rice, do not use Apron®-treated rice seed or any other rice seed that has been treated with metalaxyl (CBTS Nos. 11708 and 11709, DP Barcodes D189772 and D189764, 5/5/93, F. Griffith).

   In addition, The registrant must amend the labels for the 1% G formulations (EPA Reg. Nos. 100-664 and 100-713) to impose a 75-day PHI for peanuts and remove the feeding restriction for cotton forage, which CBRS considers to be impractical.

3. CB No. 9102, D172350, S. Hummel, 9/16/93. Additional method validation data are needed, including recoveries of representative metalaxyl metabolites including at least one containing the 2,6-dimethyl aniline moiety, CGA-94689, P1, and P2.

4. CB No. 9102, DP Barcode D172350, 9/15/93, S. Hummel.

5. A storage stability data requirement is outstanding for a representative oilseed (e.g., soybeans or a nut) and a grain crop (e.g., wheat). Storage stability data requirements are also outstanding for all processed plant commodities from an oilseed, a grain, and a fruit or fruiting vegetable. In addition, storage stability data requirements are outstanding for livestock commodities (CBRS No. 12888, DP Barcode D197066, 2/17/94, S. Hummel). Storage stability data are needed for metalaxyl and representative metabolites including CGA-94689.

6. CB No. 1996 and 2013, 3/13/87, F. Griffith.

7. CBRS No. 7193, 1/15/91, R. Perfetti.

8. CBTS No. 8898, DP Barcode D171050, 12/18/91, R. Lascola.

9. CBTS No. 10062, DP Barcode No. D179628, 7/3/92, M. Peters.

10. CBRS No. 8166, DP Barcode D165608, 4/16/92, J. Abbotts.

11. The group tolerance for root and tuber vegetables should be renamed "root and tuber vegetables group (except ginseng)," concomitant with the revocation of the established tolerances for beets, potatoes, and sugar beets.

12. PP#9F3698, CB Nos. 4788 to 4791, 8/3/89, J. Garbus; CB No. 5836, 10/23/89, J. Garbus; CB No. 6176, 2/14/90, J. Garbus; CB No. 8625, 12/12/91, K. Dockter.

13. The 0.1 ppm tolerances on beets, beet tops, and sugar beets are based on residue data generated from field trials on treated seeds. As group tolerances for root and tuber vegetables (except ginseng) and for leaves of root and tuber vegetables will cover these commodities, and as the preplant and foliar uses have superseded the seed treatment uses, these tolerances should be revoked.

14. PP#1E3926, CB No. 7340, 2/22/91, G. Otakie; CB No. 7787, 4/8/91, G. Otakie; CBTS Nos. 9054 and 9058, 3/6/92, W. Chin.

(continued; footnotes follow)

Table B (*continued*).

15. CB No. 60, 2/14/86, W. Anthony.

16. PP#3F3617/FAP#8D5554, CB Nos. 3908 through 3912, 11/28/88, F. Griffith; and CB Nos. 5934, 5935, and 6545, 4/30/90, F. Griffith.

17. CBTS recommends in favor of establishing a crop group tolerance of 5 ppm for leafy vegetables, (except Brassica), excluding spinach. Once the 5 ppm group tolerance has been established, the 5 ppm tolerance for lettuce should be revoked (PP#0F3893; CBTS No. 8898, DP Barcode 171050, 12/18/91, R. Lascola; and CBTS No. 9710, DP Barcode 176810, 5/12/92, R. Lascola).

18. CBTS No. 7171, DP Barcode D156811, 6/21/91, S. Bacchus.

19. CB No. 4808, 2/9/89, L. Propst.

20. CB No. 4809, 2/14/89, L. Propst; and CB No. 7418, 1/24/91, M. Metzger.

21. CBRS No. 7165, DP Barcode D156892, 2/19/91, K. Dockter.

22. The established 0.1 ppm crop group tolerance for Brassica (cole) leafy vegetables group (except broccoli, cabbage, and cauliflower) was established to cover seed treatments. However, as there is no registered seed treatment on any member of this group, this tolerance should be revoked. A petition proposing a crop group tolerance of 5 ppm on brassica leafy vegetables to cover soil and foliar uses is in reject status (PP#2F04072, DP Barcode D174355, 1/15/93, M. Peters). Data submitted with this petition (MRID 42159801) indicate that the established 2 ppm tolerances for cabbage and cauliflower can be reduced to 1 ppm. Data submitted with the petition indicate that a crop group tolerance is inappropriate because residue levels differ by more than a factor of 5.

23. The group tolerance for the legume vegetable group should be changed to "legume vegetables group excluding soybeans."

24. Post emergence use of the 50% WP formulation on fruiting vegetables is not supported. Supporting data must be provided or the use removed from the 50% WP label.

25. PP#7F3470/FAP#7H5520, CB Nos. 1676, 1677, and 1678, 3/6/87, M. Nelson; CB Nos. 2604, 2699, and 2700, 8/26/87, M. Nelson; and CB Nos. 3788 and 3789, 5/13/88, M. Nelson.

26. PP#1E4024, CB No. 8582, DP Barcode D168812, 10/31/91, J. Morales; and CBTS No. 9537, DP Barcode D175506, 7/17/92, J. Morales.

27. PP#4G3031/FAP#4H5424, 5/30/84, L. Cheng; and CB No. 960, 6/3/86, L. Cheng.

28. PP#6F3362/FAP#6H5493, CB Nos. 5557 and 5558, 12/11/89, G. Otakie; and CB Nos. 7646 and 7647, DP Barcodes D160990 and D161029, 9/9/91, G. Otakie.

29. Post emergence use of the 50% WP formulation on strawberries is not supported. Supporting data must be provided or the use removed from the 50% WP label.

30. PP#6F3337, CB No. 360, 2/21/86, M. Firestone; CB No. 988, 9/8/86, M. Firestone; and CB No. 2301, 9/3/87, M. Kovacs.

31. CB Nos. 4814, 4815, and 4816, 5/10/89, M. Kovacs; and CB No. 5895, 11/2/89, D. Edwards.

Table B (*continued*).

32. CBRS recommends that the proposed tolerances of 0.1 ppm in/on cereal grains group (excluding wheat, barley, and oats) and 1 ppm in/on forage, fodder, and straw of cereal grains group (excluding wheat, barley, and oats) be established concomitant with the revocation of the group tolerance for grain crops (PP#1F3993; CBRS No. 10833, DP Barcode D183914, 9/30/93, D. Miller).

33. CBRS No. 8043, DP Barcode D164655, 6/1/92, L. Cheng.

34. CBRS No. 8166, DP Barcode D165608, 4/16/92, J. Abbotts.

35. The tolerance of 0.1 ppm for grasses, forage was established to cover seed treatment. Ciba-Geigy has petitioned for crop group tolerances for grasses, forage at 10 ppm and grasses, hay at 20 ppm to cover proposed soil and foliar uses. This petition is currently in reject status (PP#2F04063; CBTS No. 9338, DP Barcode D173024, 9/22/93, M. Peters).

36. A crop group tolerance for the Non-Grass Animal Feeds Group is not appropriate because of the more than 5 fold difference between residues in alfalfa and clover hays. Individual tolerances must be established. (PP#2F4105, CBTS No. 9625, DP Barcode D175974, M. Rodriguez, 8/17/93).

37. PP#9F3675, CB Nos. 4792, 4793 and 4794, 8/3/89, J. Garbus.

38. PP#6F3330, CB No. 312, 2/7/86, M. Firestone. Postemergence use of the 50% WP formulation is not supported. Supporting data must be provided or the use removed from the 50% WP label.

39. It is unclear from the submitted residue data for cotton if the de-linted or undelinted seed was analyzed. Residue data for the undelinted cottonseed are required. In addition, CBRS now requires residue data for cotton gin byproducts (commonly called gin trash) which includes burrs, leaves, stems, lint, immature seeds, sand, and dirt. As these data requirements are based on the Livestock Feeds Table (Table II) for Subdivision O (Residue Chemistry) of the Pesticide Assessment Guidelines (June 1994), they are considered confirmatory data.

40. In accordance with PR Notice 93-12 (12/23/93), the regulated raw agricultural commodity for hops is now considered to be dried hops. The 20 ppm tolerance for hops, dried listed under 40 CFR §185.4000(d) should be moved to §180.408(a). The tolerance for the commodities hops, green (0.5 ppm under §180.408[a]) and the feed additive tolerance for hops, dry (2 ppm under 40 CFR § 186.4000[a]) should be revoked. In addition, the 20 ppm tolerance for hops, spent listed under 40 CFR § 186.4000(d) should be revoked as metalaxyl residues in spent hops will now be covered by the tolerance on the RAC.

41. FAP# 7H5532, CB Nos. 4078 and 4190, 9/28/88, S. Willett; and CB No. 4630, 11/17/88, S. Willett.

42. PP#9F3712, CB Nos. 4811, 4812 and 4813, 4/11/89, S. Willett; CB No. 5579, 8/18/89, F. Toghrol; and CBTS No. 9011, DP Barcode D169779, 6/19/92, J. Morales.

43. PP#8E3605, CB No. 3360, 5/5/88, F. Griffith.

44. The tolerance for peanut, vines should be revoked, as this commodity is no longer regulated because it is not a major livestock feed item.

45. CBRS No. 8043, DP Barcode D164655, 6/1/92, L. Cheng; and CBRS No. 10743, DP Barcode D183659, 11/24/92, L. Cheng.

46. CBRS No. 11238, DP Barcode D187081, 7/22/93, J. Abbotts.

47. The tolerances for pineapple fodder and forage should be revoked as these commodities are not major livestock feed items.

Table B (*continued*).

48. The feed additive tolerance for apple, pomace, dry should be revoked, as the regulated feed item is apple pomace, wet.

49. CBRS No. 11238, DP Barcode No. D187081, 7/22/93, J. Abbotts.

50. CBTS No. 11708 and 11709, DP Barcode D189772 and 189764, 5/5/93, F. Griffith.

51. The tolerance for peanut, soapstock should be revoked as this commodity is not a major livestock feed item.

52. A feed additive tolerance of 0.5 ppm for pineapple, process residue is appropriate and should be proposed and established (CBRS No. 9596, DP Barcode D175852, 6/22/92, R. Perfetti; and CBRS No. 11238, DP Barcode D187081, 7/22/93, J. Abbotts).

53. Metalaxyl residues were found to concentrate up to 15.3x, 2.4x, and 1.4x in dried peel, potato flakes, and potato chips, respectively. Residues did not concentrate in the wet peel. Based on a 0.5 ppm tolerance for potatoes, food additive tolerances for the processed commodities potato granules/flakes and chips be proposed at 2 ppm, concomitant with the revocation of the established 4.0 ppm tolerance for potato, processed (including potato chips). In addition, the feed additive tolerance for potato waste, dried, processed should be increased to 10 ppm from 4 ppm, and renamed as processed potato waste (CBRS No. 8043, DP Barcode D164655, 6/1/92, L. Cheng).

54. CBRS No. 8043, DP Barcode D164655, 6/1/92, L. Cheng.

55. The tolerance for soybean, soapstock should be revoked, as this commodity is not a major livestock feed item.

56. Residues in molasses were found to concentrate up to 10x. Based on the 0.5 ppm tolerance for sugar beets, the feed additive tolerance for molasses listed under 40 CFR §186.4000(a) must be increased from 1.0 to 5 ppm (CB Nos. 3908 through 3912, 11/28/88, F. Griffith; and CB Nos. 5934, 5935, and 6545, 4/30/90, F. Griffith). The feed additive tolerance of 5.0 ppm listed under 40 CFR §186.4000(b) (inadvertent tolerance) should be revoked.

57. CB Nos. 3908 through 3912, 11/28/88, F. Griffith; and CB Nos. 5934, 5935, and 6545, 4/30/90, F. Griffith.

58. The available data indicate that residues concentrated by up to 1.5x in sunflower, meal; a 0.2 ppm feed additive tolerance for sunflower, meal is appropriate (CBRS No. 11238, DP Barcode D187081, 7/22/93, J. Abbotts).

59. CBRS No. 8043, DP Barcode D164655, 6/1/92, L. Cheng.

60. CBRS No. 11238, DP Barcode D187081, 7/22/93, J. Abbotts.

61. Data are required to determine if residues concentrate in tomato paste (Table II, June, 1994)

62. Confined Rotational Crop studies have been submitted and are currently under review.

63. Partially reviewed in CB No. 12312, DP Barcode No. D193692, 8/16/93, G. Herndon.

TOLERANCE REASSESSMENT SUMMARY

Tolerances Listed Under 40 CFR § 180.408 (a):

The tolerances listed in 40 CFR § 180.408(a) are for the combined residues of metalaxyl and its metabolites containing the 2,6-dimethylaniline moiety, and *N*-(2-hydroxy methyl-6-methylphenyl)-*N*-(methoxyacetyl)-alanine methylester, each expressed as metalaxyl.

Sufficient data are available to ascertain the adequacy of the established tolerances listed in 40 CFR § 180.408(a) for the following commodities: alfalfa, almonds, apples, asparagus, avocados, blueberries, broccoli, cabbage, cauliflower, cereal grains (excluding wheat, barley, and oats) group, citrus fruits group, cranberries, cucurbit vegetables group, fruiting vegetables (except cucurbits) group, ginseng, grapes, leafy vegetables (excluding brassica) group, leaves of root and tuber vegetables group, legume vegetables (succulent or dried group, excluding soybeans), foliage of legume vegetables group, onions (bulb and green), peanuts, pineapples, potatoes, raspberries, root and tuber vegetables (excluding ginseng) group, soybeans, spinach, stone fruits group, strawberries, sunflowers, and walnuts.

The established tolerances for green hops (0.2 ppm), peanut vines (20 ppm), and pineapple forage and fodder (0.1 ppm) should be revoked as these are no longer regulated RACs.

The established tolerances for beets (0.1 ppm), potatoes (0.5 ppm), and sugar beets (0.1 ppm and 0.5 ppm) should be revoked as these commodities are covered by the established root and tuber vegetable group tolerance (0.5 ppm). The established root and tuber group should exclude ginseng which has an established 3.0 ppm tolerance. In addition, the established tolerances for beet tops (0.1 ppm) and sugar beet tops (10.0 ppm) should be revoked as they are covered under the established crop group tolerance for leaves of root and tuber vegetables (15.0 ppm).

The established tolerance of 0.1 ppm for the Brassica (cole) leafy vegetable group (excluding broccoli, cabbage, and cauliflower) should be revoked as this tolerance was established to cover residues resulting from seed treatments which are no longer registered uses. Separate tolerances will be required for each member of the Brassica leafy vegetable group, because of the greater than five fold difference in residue levels. The available residue data indicate that the established tolerances for cabbage and cauliflower (2 ppm) should be lowered to 1 ppm.

A petition (PP#0F3893) proposing a crop group tolerance for leafy vegetables (except Brassica, excluding spinach) has been submitted. Sufficient data have been submitted to ascertain the adequacy of the pending tolerances. The established tolerance for the leafy vegetables group (excluding Brassica) should be increased from 0.1 ppm to 5 ppm and the group should be renamed to also exclude spinach. Once the increased tolerance is established, the established tolerance for head lettuce (5 ppm) should be revoked.

A petition (PP#1F3993) for crop group tolerances for the cereal grains group (excluding wheat, barley, and oat) and the forage, fodder, and straw of cereal grain group (excluding wheat, barley, and oat) has been submitted. Sufficient data have been submitted to ascertain the adequacy of the pending tolerances. A 0.1 ppm tolerance must be established for the cereal grains group (excluding wheat, barley, and oats), and a tolerance of 1.0 ppm must be established for the forage, fodder, and straw of cereal grains group (excluding wheat, barley, and oats).

Additional data are required to support the 0.1 ppm tolerances for cottonseed.

The adequacy of the established tolerances for meat, fat, and meat byproducts of cattle, goats, horses, sheep and poultry and for milk and eggs will be determined once questions pertaining to the analytical method are resolved and the submitted ruminant feeding studies are re-evaluated.

Tolerances Listed Under 40 CFR § 180.408(b):

The tolerances listed in 40 CFR § 180.408(b) are for the indirect or inadvertent residues of metalaxyl present as a result of the application of metalaxyl to the growing of the primary crops listed in 40 CFR § 180.408(a) and tobacco.

Sufficient data are available to ascertain the adequacy of the established indirect or inadvertent tolerances listed in 40 CFR § 180.408(b). Additional field rotational crop studies have been submitted and are currently under review.

Tolerances Listed Under 40 CFR § 180.408(c):

The tolerance listed in 40 CFR § 180.408(c) are with regional registration for the combined residues of metalaxyl and its metabolites containing the 2,6-dimethylaniline moiety, and *N*-(2-hydroxy methyl-6-methylphenyl)-*N*-(methoxyacetyl)-alanine methylester, each expressed as metalaxyl in/on papaya in HI.

Sufficient data are available to ascertain the adequacy of the established tolerances listed in 40 CFR § 180.408(c) for papaya.

Tolerances Listed Under 40 CFR § 185.4000(a):

The food additive tolerances listed in 40 CFR § 185.4000(a) are for the combined residues of metalaxyl and its metabolites containing the 2,6-dimethylaniline moiety, and *N*-(2-hydroxy methyl-6-methylphenyl)-*N*-(methoxyacetyl)-alanine methylester, each expressed as metalaxyl.

Sufficient data are available to ascertain the adequacy of the established food additive tolerances listed in 40 CFR § 185.4000(a) for the following food commodities: citrus oil, dried prunes, raisins, potatoes processed (including potato chips), and tomato puree.

The established tolerance for dried apricots (4 ppm) should be revoked as it is not a regulated commodity.

A 2.0 ppm food additive tolerance for potato granules/flakes and potato chips should be proposed. Once these tolerances are established, the food additive tolerance of 4.0 ppm for potatoes, processed (including potato chips) should be revoked.

Tolerances Listed Under 40 CFR § 185.4000(b):

The food additive tolerances listed in 40 CFR § 185.4000(b) are for the indirect or inadvertent residues of metalaxyl present as a result of the application of metalaxyl to the growing of the primary crops listed in 40 CFR § 180.408(a) and tobacco.

Sufficient data are available to ascertain the adequacy of the established inadvertent or indirect tolerances listed in 40 CFR § 185.4000(b). Additional field rotational crop studies have been submitted and are currently under review.

Tolerances Listed Under 40 CFR § 185.4000(d):

The food additive tolerance listed in 40 CFR § 185.4000(d) is for the combined residues of metalaxyl and its metabolites containing the 2,6-dimethylaniline moiety, and *N*-(2-hydroxymethyl-6-methylphenyl)-*N*-(methoxyacetyl) alanine methylester, each expressed as metalaxyl.

Sufficient data are available to ascertain the adequacy of the established food additive tolerance listed in 40 CFR § 185.4000(d) for dried hops. However, as the regulated RAC for hops is now considered to be dried hops [*Source: PR Notice 93-12 (12/23/93)*], the 20 ppm tolerance for hops, dried should be moved to 40 CFR §180.408(a).

Tolerances Listed Under 40 CFR § 186.4000(a):

The feed additive tolerances listed in 40 CFR § 186.4000(a) are for the combined residues of metalaxyl and its metabolites containing the 2,6-dimethylaniline moiety, and *N*-(2-hydroxy methyl-6-methylphenyl)-*N*-(methoxyacetyl)-alanine methylester, each expressed as metalaxyl.

Sufficient data are available to ascertain the adequacy of the established feed additive tolerances listed in 40 CFR § 186.4000(a) for the following feed commodities: apple pomace (wet), citrus molasses and dried pulp, grape pomace (wet and dried), peanut meal, processed potato waste, raisin waste, soybean hulls and meal, sugar beet molasses, and tomato pomace (dried).

The tolerance for potato waste, dried, processed should be increased from 4.0 ppm to 10 ppm and renamed potatoes, waste from processing. The tolerance for sugar beet molasses should be increased from 1.0 ppm to 5.0 ppm concomitant with the revocation of the 5.0

ppm for indirect or inadvertent residues in sugar beet molasses listed under 40 CFR 186.4000 (b).

The established 2.0 ppm tolerances for apple pomace (dry), hops (dry), peanut soapstock, and soybean soapstock and the 5.0 ppm tolerance for legume vegetable cannery waste should be revoked as these commodities are no longer being regulated because they are not considered major livestock feed items.

Feed additive tolerances must be proposed and established for pineapple process residue (0.5 ppm) and sunflower meal (0.2 ppm).

Tolerances Listed Under 40 CFR § 186.4000(b):

The feed additive tolerances listed in 40 CFR § 186.4000(b) are for the indirect or inadvertent residues of metalaxyl present as a result of the application of metalaxyl to the growing of the primary crops listed in 40 CFR § 180.408(a) and tobacco.

Sufficient data are available to ascertain the adequacy of the established indirect or inadvertent tolerances listed in 40 CFR § 186.4000(b) for the following feed commodities: barley, oats, and wheat, milling fractions.

The indirect or inadvertent tolerance for sugar beet molasses of 5 ppm should be revoked as the need for this tolerance is superseded by the 5 ppm tolerance for this commodity in 40 CFR §186.4000(a).

Tolerances Listed Under 40 CFR § 186.4000(d):

The tolerances listed in 40 CFR § 186.4000(d) are for the combined residues of metalaxyl and its metabolites containing the 2,6-dimethylaniline moiety, and *N*-(2-hydroxymethyl-6-methylphenyl)-*N*-(methoxyacetyl) alanine methylester, each expressed as metalaxyl.

The 20 ppm tolerance for spent hops should be revoked as residues in spent hops will be covered by the 20 ppm tolerance on the RAC (hops, dried).

Table C. Tolerance Reassessment Summary for Metalaxyl

Commodity	Current Tolerance (ppm)	Tolerance Reassessment (ppm)	Comment/*Correct Commodity Definition*
Tolerances listed under 40 CFR §180.408(a)			
Alfalfa, forage	6.0	6.0	
Alfalfa, hay	20.0	20.0	
Almonds	0.5	0.5	
Almonds, hulls	10.0	10.0	
Apples	0.2	0.2	
Asparagus	7.0	7.0	
Avocados	4.0	4.0	
Beets	0.1	Revoke	Established 0.1 ppm tolerance was based on seed use which has been superseded by preplant and foliar uses. In addition, tolerance is covered by 0.5 ppm crop group tolerance for *root and tuber vegetables (exc. ginseng).*
Beet, top	0.1	Revoke	Tolerance covered by 15.0 ppm crop group tolerance for *leaves of root and tuber vegetables.*
Blueberries	2.0	2.0	
Brassica (cole) leafy vegetables group [excluding broccoli, cabbage, and cauliflower]	0.1	Revoke	Separate tolerances are required for each member of the Brassica vegetable crop group for which metalaxyl use is registered.
Broccoli	2.0	2.0	
Cabbage	2.0	1.0	
Cauliflower	2.0	1.0	
Cattle, fat	0.4	To be determined	Additional data may be required.
Cattle, kidney	0.4		
Cattle, liver	0.4		
Cattle, meat	0.05		
Cattle, mbyp (excluding kidney and liver)	0.05		
Citrus fruit	1.0	1.0	*Citrus fruits group*
Cottonseed	0.1	To be determined	*Cotton, undelinted seed* Additional residue data are required.
Cranberry	4.0	4.0	*Cranberries*

(continued; footnotes follow)

Table C *(continued).*

Commodity	Current Tolerance (ppm)	Tolerance Reassessment (ppm)	Comment/*Correct Commodity Definition*
Cucurbit vegetables group	1.0	1.0	
Eggs	0.05	To be determined	Additional data may be required.
Fruiting vegetables (excluding cucurbits) group	1.0	1.0	
Ginseng	3.0	3.0	
Goats, fat	0.4	To be determined	Additional data may be required.
Goats, kidney	0.4		
Goats, liver	0.4		
Goats, meat	0.05		
Goats, mbyp (excluding kidney and liver)	0.05	To be determined	Additional data may be required.
Grain, crops	0.1	0.1	*Cereal grains (exc. wheat, barley, and oats).*
Grapes	2.0	2.0	
Grasses, forage	0.1	0.1	
Hogs, fat	0.4	To be determined	Additional data may be required.
Hogs, kidney	0.4		
Hogs, liver	0.4		
Hogs, meat	0.05		
Hogs, mbyp (excluding kidney and liver)	0.05		
Hops, green	2.0	Revoke	Hops, green is no longer a regulated RAC.
Horses, fat	0.4	To be determined	Additional data may be required.
Horses, kidney	0.4		
Horses, liver	0.4		
Horses, meat	0.05		
Horses, mbyp (excluding kidney and liver)	0.05		
Leafy vegetables (excluding brassica) group	0.1	5.0	*Leafy vegetables (exc. Brassica, exc. spinach)*

(continued; footnotes follow)

Table C *(continued).*

Commodity	Current Tolerance (ppm)	Tolerance Reassessment (ppm)	Comment/*Correct Commodity Definition*
Lettuce, head	5.0	Revoke	Tolerance will be covered by 5.0 ppm crop group tolerance for leafy vegetables (exc. Brassica, exc. spinach).
Leaves of root and tuber vegetables (human food or animal feed) group	15.0	15.0	
Legume vegetable foliage	8.0	8.0	*Legume vegetables group, Foliage of*
Legume vegetable group (dry or succulent)	0.2	0.2	*Legume vegetables (succulent or dried) group, exc. soybeans*
Milk	0.02	To be determined	Additional data may be required.
Onions, dry bulb	3.0	3.0	
Onions, green	10.0	10.0	
Peanut, hay	20.0	20.0	
Peanut, vines	20.0	Revoke	Peanut vines are no longer a regulated RAC.
Peanut, Nuts	0.2	0.2	*Peanuts, nutmeat*
Peanut, shells	2.0	2.0	*Peanuts, hulls (shells)*
Pineapples	0.1	0.1	
Pineapple fodder	0.1	Revoke	Pineapple fodder and forage are no longer regulated RACs.
Pineapple forage	0.1	Revoke	
Potatoes	0.5	Revoke	Tolerance covered by 0.5 ppm crop group tolerance for *root and tuber vegetables (exc. ginseng).*
Poultry, fat	0.4	To be determined	Additional data may be required.
Poultry, kidney	0.4		
Poultry, liver	0.4		
Poultry, meat	0.05		
Poultry, mbyp (excluding kidney and liver)	0.05		
Raspberries	0.5	0.5	
Root and tuber vegetables group	0.5	0.5	*Root and tuber vegetables (exc. ginseng).*
Soybean, grain	1.0	1.0	*Soybeans*
Spinach	10.0	10.0	

(continued; footnotes follow)

Table C *(continued)*.

Commodity	Current Tolerance (ppm)	Tolerance Reassessment (ppm)	Comment/*Correct Commodity Definition*
Sugar beets	0.1	Revoke	Tolerance covered by 0.5 ppm crop group tolerance for *root and tuber vegetables (exc. ginseng)*.
Sugar beet (tops)	10.0	Revoke	
Sugar beet (roots)	0.5	Revoke	
Sheep, fat	0.4	To be determined	Additional data may be required.
Sheep, kidney	0.4		
Sheep, liver	0.4		
Sheep, meat	0.05		
Sheep, mbyp (excluding kidney and liver)	0.05		
Stone fruit group	1.0	1.0	*Stone fruits group*
Strawberries	10.0	10.0	
Sunflowers	0.1	0.1	*Sunflower, seed*
Sunflower, forage	0.1	0.1	
Walnuts	0.5	0.5	
Tolerances listed under 40 CFR §180.408(b)			
Barley, grain	0.2	0.2	
Barley, fodder	2.0	Revoke	No longer regulated
Barley, forage	2.0	2.0	
Barley, straw	2.0	2.0	
Oat, fodder	2.0	Revoke	No longer regulated
Oat, forage	2.0	2.0	*Oats, forage*
Oat, grain	0.2	0.2	*Oats, grain*
Oat, straw	2.0	2.0	*Oats, straw*
Wheat, fodder	2.0	Revoke	No longer regulated
Wheat, forage	2.0	2.0	
Wheat, grain	0.2	0.2	
Wheat, straw	2.0	2.0	
Tolerances listed under 40 CFR §180.408(c)			
Papaya	0.1	0.1	

(continued; footnotes follow)

Table C *(continued).*

Commodity	Current Tolerance (ppm)	Tolerance Reassessment (ppm)	Comment/*Correct Commodity Definition*
Food Additive Tolerances listed under 40 CFR §185.4000(a)			
Apricots (dried)	4.0	Revoke	Dried apricots are not a regulated commodity.
Citrus, oil	7.0	7.0	
Potatoes, processed (including potato chips)	4.0	Revoke	See *potato granules/flakes* and *potato chips* below.
Prunes (dried)	4.0	4.0	
Raisins	6.0	6.0	*Grapes, raisins*
Tomatoes, processed	3.0	3.0	*Tomato, puree*
Food Additive Tolerances listed under 40 CFR §185.4000(b)			
Barley, milling fractions	1.0	1.0	
Oat milling fractions	1.0	1.0	*Oats, milling fractions*
Wheat, milling fractions	1.0	1.0	
Food Additive Tolerances listed under 40 CFR §185.4000(d)			
Hops, dried	20.0	Move to 40 CFR §180.408(a)	Hops, dried are now regulated as a RAC
Feed Additive Tolerances listed under 40 CFR §186.4000(a)			
Apple, pomace (dry)	2.0	Revoke	Apple, pomace (dry) is no longer produced as a significant livestock feed.
Apple, pomace (wet)	0.4	0.4	*Apple, pomace*
Citrus, molasses	7.0	7.0	
Citrus, pulp	7.0	7.0	*Citrus, pulp, dried*
Grape pomace (dry)	10.0	10.0	*Grapes, pomace, dried*
Grape pomace (wet)	10.0	Revoke	Covered by 10 ppm tolerance on Grapes, pomace, dried
Hops, dry	2.0	Revoke	Hops, dry is no longer a regulated commodity.
Legume vegetable, cannery waste	5.0	Revoke	Legume vegetable cannery waste is no longer regulated.
Peanut, meal	1.0	1.0	*Peanuts, meal*
Peanut, soapstock	2.0	Revoke	Peanut soapstock is no longer a regulated commodity.
Potato waste, dried, processed	4.0	10.0	*Potatoes, waste from processing*
Raisin waste	10.0	10.0	*Grapes, raisin waste*
Soybean, hulls	2.0	2.0	*Soybeans, hulls*

(continued; footnotes follow)

Table C *(continued).*

Commodity	Current Tolerance (ppm)	Tolerance Reassessment (ppm)	Comment/*Correct Commodity Definition*
Soybean, meal	2.0	2.0	*Soybeans, meal*
Soybean, soapstock	2.0	Revoke	Soybean soapstock is no longer a regulated commodity.
Sugar beet molasses	1.0	5.0	*Sugar beets, molasses*
Tomato pomace (dry and wet)	20.0	20.0	*Tomato, pomace, dried*
Feed Additive Tolerances listed under 40 CFR §186.4000(b)			
Barley, milling fractions	1.0	1.0	
Oat milling fractions	1.0	1.0	*Oats, milling fractions*
Sugar beet molasses	5.0	Revoke	Inadvertent tolerance covered by primary use tolerance listed under 40 CFR §186.4000(a).
Wheat, milling fractions	1.0	1.0	
Feed Additive Tolerances listed under 40 CFR §186.4000(d)			
Hops, spent	20	Revoke	Tolerance will be covered by the 20.0 ppm tolerance on the RAC, *Hops, dried.*
Tolerances required under 40 CFR §180.408(a)			
Forage, fodder, and straw of cereal grains group (excluding wheat, barley, and oats)	None	1.0	Must be established.
Food Additive Tolerances required under 40 CFR §185.4000(a)			
Potatoes, granules/flakes	None	2.0	Must be proposed.
Potatoes, chips	None	2.0	Must be proposed.
Feed Additive Tolerances required under 40 CFR §186.4000(a)			
Pineapples, process residue	None	0.5	Must be established.
Sunflower seeds, meal	None	0.2	Must be established.

CODEX HARMONIZATION

Numerous maximum residue limits (MRLs) for metalaxyl residues in plant commodities have been established by Codex. Codex currently regulates metalaxyl *per se* in plant commodities; however, CBTS has concluded that the U.S tolerance definition for plant commodities should include metalaxyl and its metabolites that can be converted to 2,6-dimethylaniline and N-(2-hydroxymethyl-6-methylphenyl)-N-(methoxyacetyl) alanine methyl ester. The Codex MRLs and the applicable U.S. tolerances are presented in Table D.

Table D. Codex MRLs and Applicable U.S. Tolerances.

Commodity	MRL (mg/kg) [a]	U.S. Tolerance (ppm) [b]	Recommendation/ Comments [c]
Apple	0.05 [d]	0.2	--
Asparagus	0.05 [d]	7.0	--
Avocado	0.2	4.0	--
Broccoli	0.5	2.0	--
Brussels sprouts	0.2	0.1 (Brassica leafy vegetables)	--
Cabbages, head	0.5	2.0	--
Cacao beans	0.2	None	--
Carrot	0.05 [d]	0.5 (Root and tuber vegetables)	--
Cauliflower	0.5	2.0	--
Cereal grains	0.05 [d]	0.1 (grain, crops)	--
Citrus fruits	5	1	--
Cotton seed	0.05 [d]	0.1	--
Cucumber	0.5	1.0 (Cucurbit vegetables)	--
Gherkin	0.5	1.0 (Cucurbit vegetables)	--
Grapes	1	None	--
Hops, dry	10	20.0 (Hops, dried)	--
Lettuce, head	2 [e]	5.0	--
Melons, except watermelon	0.2	1.0 (Cucurbit vegetables)	--
Onion, bulb	0.2 [e]	0.5	--
Peanut	0.1	0.01	--
Peas, shelled	0.05 [d]	0.1 (Legume vegetables)	--
Peppers	1	1.0 (Fruiting vegetables)	--
Pome fruits	1	None	--

(continued; footnotes follow)

Commodity	MRL (mg/kg) [a]	U.S. Tolerance (ppm) [b]	Recommendation/ Comments [c]
Potato	0.05 [d]	0.5	--
Raspberries, Red, Black	0.2	0.5	--
Soya bean (dry)	0.05 [d]	1.0	--
Spinach	2 [e]	10.0	--
Squash, Summer	0.2	1.0 (Cucurbit vegetables)	--
Strawberry	0.2	10.0	--
Sugar beet	0.05 [d]	0.5 (Sugar beet, roots)	--
Sunflower seed	0.05 [d]	0.1	--
Tomato	0.5	1.0 (Fruiting vegetables)	--
Watermelon	0.2	1.0 (Cucurbit vegetables)	--
Winter squash	0.2	1.0 (Cucurbit vegetables)	--

[a] All metalaxyl MRLs are final (CXL), except MRLs for lettuce, onions, and spinach which are at step 8 and the MRL for strawberries which is at step 7B.
[b] Based on the combined residues of metalaxyl and its metabolites that can be converted to 2,6-DMA and N-(2-hydroxymethyl-6-methylphenyl)-N-(methoxyacetyl) alanine methyl ester.
[c] As the tolerance definitions for Codex MRLs and U.S. tolerances are different, harmonization of Codex MRLs and U.S. tolerances is not currently possible.
[d] At or about the limit of detection.
[e] MRL is temporary.

The following conclusion can be made regarding efforts to harmonize the U.S. tolerances with the Codex MRLs:

- Harmonization of Codex MRLs and U.S. tolerances for metalaxyl is not possible at the present time as the Codex and U.S. tolerance definitions are incompatible.

DIETARY EXPOSURE ASSESSMENT SUMMARY

Current and/or recommended tolerance levels should be used for exposure assessment. For livestock commodities, we have calculated upper bound residue estimates, correcting for the recovery by the enforcement analytical method, as measured in the metalaxyl livestock metabolism studies.

Upper Bound Residues in Meat, Milk, Poultry, and Eggs are estimated from the total radioactive residue (TRR) from existing feeding studies discussed in the Metalaxyl FRSTR

Residue Chemistry Chapter of 6/22/87. The residues found in feeding studies are corrected for enforcement method recoveries from the metalaxyl metabolism studies (S. Hummel memo of 9/15/93, CB No. 9102, DP Barcode D172350). Calculations of the dietary burden for beef cattle, dairy cattle, and poultry are presented below, followed by the calculation of the upper bound residue estimates for each tissue, milk, and eggs. The upper bound residue estimates calculated here should be used for metalaxyl dietary exposure assessment instead of the established tolerances.

Dietary Intake Analysis for Beef Cattle

=====Feeds Items====		Feed	Feed Consump.	Feed Tolerance	Dietary Burden
Crop	Feed	%DM	Percent	(ppm)	(ppm)
Alfalfa	Hay	89%	0.0%	20.000	0.000
Almond	Hulls	90%	25%	10.000	2.778
Bean*	Forage	35%	30%	8.000	6.857
Soybean	Seed	89%	15%	1.000	0.169
Wheat	Grain	89%	0%	0.200	0.000
Wheat	Milled bypts	88%	10%	1.000	0.114
Grape	Pomace, Wet	15%	20%	10.000	13.333
	Total:		100.0%	Total:	23.250

Dietary Intake Analysis For Dairy Cattle

=====Feeds Items====		Feed	Feed Consump.	Feed Tolerance	Dietary Burden
Crop	Feed	%DM	Percent	(ppm)	(ppm)
Bean*	Forage	35%	60%	8.000	13.714
Almond	Hulls	90%	15%	10.000	1.667
Soybean	Seed	89%	20%	1.000	0.225
Wheat	Milled bypts	88%	5%	0.200	0.011
Grape	Pomace, Wet	15%	0%	10.000	0.000
	Total:		100.0%	Total:	15.617

Dietary Intake Analysis for Poultry

=====Feeds Items====		Feed Consump.	Feed Tolerance	Dietary Burden
Crop	Feed	Percent	(ppm)	(ppm)
Alfalfa	Meal	10.0%	20.000	2.000
Soybean	Seed	20.0%	1.000	0.200
Wheat	Milled bypts	45.0%	1.000	0.450
Peanut	Meal	25.0%	1.000	0.250
	Total:	100.0%	Total:	2.900

Calculation of Upper Bound Residues of Metalaxyl in Meat, Milk, Poultry, and Eggs

Tissue	Feed Lvl (ppm)	Metalaxyl TRR (ppm)	% Recovery by enforcement method[a]	Corrected Metalaxyl Residue (ppm)	Dietary Burden (ppm)	Estimated Upper Bound Residue (ppm)
Dairy Cattle						
muscle	75	0.14	58	0.24	23	0.074
fat	75	<0.05	89	0.06	23	0.017
liver[b]	75	0.14	30	0.47	23	0.143
kidney[b]	75	0.13	30	0.43	23	0.133
milk	75	0.02	49	0.04	16	0.009
Poultry						
Eggs	5	<0.05	22	0.23	2.9	0.132
muscle	5	<0.05	26	0.19	2.9	0.112
fat	5	<0.05	18	0.28	2.9	0.161
liver	5	<0.05	19	0.26	2.9	0.153
skin	5	<0.05	18	0.28	2.9	0.161

[a] Recovery of Total Radioactive Residue (TRR) using the Enforcement Analytical Method

[b] Cattle liver and kidney samples were from 14-28 feeding periods; higher levels were reported at shorter feeding times, but cattle were slaughtered several hours after the final dose. At the 14 and 28 day dosing period, cattle were slaughtered 24 hours after the final dose.

AGENCY MEMORANDA CITED IN THIS DOCUMENT

CB No.:	312
Subject:	PP#6F3330. Metalaxyl on Asparagus. Evaluation of Analytical Methods and Residue Data.
From:	M. Firestone
To:	H. Jacoby and Toxicology Branch (HED)
Dated:	02/07/86
MRID(s):	00154446
CB No.:	60
Subject:	EPA Reg. #100-629 [Accession #259156]. Metalaxyl (Ridomil®-MZ58]: Amended Registration
From:	W. Anthony, HED
To:	H. Jacoby, RD
Dated:	02/14/86
MRID(s):	00098428
CB No.:	360
Subject:	PP#6F3337 - Metalaxyl on Strawberries--Evaluation of Analytical Methods and Residue Data (Accession Numbers 260658 and 260659).
From:	M. Firestone, HED
To:	H. Jacoby, RD, and Toxicology Branch, HED
Dated:	02/21/86
MRID(s):	00155237
CB No.:	960
Subject:	FAP#4H5425. Metalaxyl on Grapes. Amendment of May 19, 1986. No Accession Number.
From:	L. Cheng, HED
To:	H. Jacoby/B. Cool, RD
Dated:	06/03/86
MRID(s):	00138818
CB No.:	986
Subject:	PP#6F3337. Metalaxyl on Strawberries - Amendment Dated April 11, 1986
From:	M. Firestone
To:	H. Jacoby and Toxicology Branch (HED)
Dated:	09/08/86
MRID(s):	00155237
CBRS No(s).:	1676, 1677, 1678
Subject:	PP#7F3470. Metalaxyl in or on Blueberries, Walnuts, Almonds, Almond Hulls, Stone Fruits, Dried Apricots, and Prunes.
From:	M. Nelson
To:	L. Rossi and Toxicology Branch (HED)
Dated:	03/06/87
MRID(s):	00164649, 00164650, 00164651

CB No(s).:	1996 and 2013
Subject:	PP#6F3387. Metalaxyl on Fruiting Vegetables (except Curcurbits), Sugar Beets and Sugar Beet Tops. Evaluation of February 26, 1987, Amendment.
From:	F. Griffith
To:	L. Rossi and Toxicology Branch (HED)
Dated:	03/13/87
MRID(s):	40106601

CB No.:	2604, 2699, 2700
Subject:	PP#7F3470/FAP#7H5520, EPA Reg. No. 100-601. Metalaxyl in or on Blueberries, Walnuts, Almonds, Almond Hulls, Stone Fruits, Dried Apricots and Prunes.
From:	M. Nelson
To:	L. Rossi and Toxicology Branch, HED
Dated:	08/26/87
MRID(s):	None

CB No.:	2301
Subject:	PP#6F3337. Metalaxyl on Strawberries - Amendment Dated March 4, 1987.
From:	M. Kovacs
To:	L. Rossi and Toxicology Branch (HED)
Dated:	09/03/87
MRID:	None

CB No.:	3360
Subject:	PP#8E3605. Petition Review for Establishment of Tolerance(s). Metalaxyl on Papaya
From:	F. Griffith
To:	H. Jamerson and Toxicology Branch (HED)
Dated:	05/05/88
MRID:	40490500 and -01

CBRS No(s).:	3788 and 3789
Subject:	PP#7F3470/FAP#7H5520. Metalaxyl in or on Blueberries, Walnuts, Almonds, Almond Hulls, Stone Fruits, Dried Apricots, and Prunes.
From:	M. Nelson, HED
To:	L. Rossi, RD, and Toxicology Branch, HED
Dated:	05/13/88
MRID(s):	40503100 and -01

CB No(s).:	4078 and 4190
Subject:	FAP#7H5532. Metalaxyl (Ridomil) on Hops. Amendments of July 8 and 19, 1988.
From:	S. Willett, HED
To:	L. Rossi, RD, and Toxicology Branch, H-FS, HED
Dated:	09/28/88
MRID(s):	40746900 and -01

CB No.:	4630
Subject:	FAP#7H5532. Metalaxyl (Ridomil) on Hops. Revised Sections B and F.
From:	S. Willett, HED
To:	L. Rossi/M. Fiol, RD, and Toxicology Branch, HED
Dated:	11/17/88
MRID(s):	None

CB No.:	3908 through 3912
Subject:	PP#8F3617/FAP#8H5554. Metalaxyl on Sugar Beet Tops and Roots; Legume Vegetables (Dry and Succulent) Crop Groups; Legume Vegetables Foliage Crop Group; Grass Forage, Fodder, and Hay Crop Group; and Nongrass Animal Feeds Crop Group. Evaluation of Analytical Methods and Residue Data
From:	F. Griffith
To:	L. Rossi and Toxicology Branch (HED)
Dated:	11/28/88
MRID:	40534800 through -03 and 40569301 through -03

CB No.:	4808
Subject:	EPA Reg. No. 100-628. Ridomil 5G (Metalaxyl). Amended Registration Request to Add Use on Head Lettuce.
From:	L. Propst, CBRS, HED
To:	L. Rossi, RD
Dated:	02/09/89
MRID:	40775801

CB No.:	4809
Subject:	EPA Reg. No. 100-628. Ridomil 5G (Metalaxyl). Amended Registration Request to Add Use on Spinach.
From:	L. Propst, CBRS, HED
To:	L. Rossi, RD
Dated:	02/14/89
MRID:	40790201

CB No(s).:	4811, 4812, 4813
Subject:	PP#9F3712. Metalaxyl on Green Hops. Petition to Revise Tolerance.
From:	S. Willett
To:	L. Rossi and Toxicology Branch (HED)
Dated:	04/11/89
MRID(s):	40909401

CB No(s).:	4814, 4815, 4816
Subject:	PP#6F3337. Metalaxyl on Strawberries - Amendment Dated November 4, 1988.
From:	M. Kovacs
To:	S. Lewis and Toxicology Branch (HED)
Dated:	05/10/89
MRID(s):	40880400 and 40880401

CB No(s).:	4792, 4793, and 4794
Subject:	PP#8F3695/FAP#8H5569: Metalaxyl: Tolerances for Alfalfa and for Barley as Rotational Crop. Evaluation of Residue Data and Analytical Methodology.
From:	J. Garbus, CBRS, HED
To:	L. Rossi, RD
Dated:	08/03/89
MRID(s):	40832901

CB No(s).:	4788 to 4791
Subject:	PP#8F3698: Metalaxyl: Tolerances for Metalaxyl for the Crop Grouping Root and Tuber Vegetables. Evaluation of Residue Data and Analytical Methodology.
From:	J. Garbus, CBRS, HED
To:	L. Rossi, RD
Dated:	08/03/89
MRID(s):	40838301 to 40838303

CB No.:	5579
Subject:	OR-890008; 24(c) Registration for the Use of Metalaxyl (Ridomil 2E Fungicide) on Hops. EPA Reg. No. 100-607.
From:	F. Toghrol, CBRS, HED
To:	S. Lewis, RD
Dated:	08/18/89
MRID(s):	None

CB No.:	5836
Subject:	PP#9F3698: [Formerly PP#8F3698]: Metalaxyl: Tolerances for the Crop Grouping: Root and Tuber Vegetables. Amendment of September 25, 1989. Revised Sections B and F for PP#8F3698.
From:	J. Garbus, CBRS, HED
To:	S. Lewis/B. Chambliss, RD
Dated:	10/23/89
MRID(s):	None

CBRS No.:	5895
Subject:	PP#6F3337. Metalaxyl on Strawberries. Amendment of 09/27/89.
From:	D. Edwards
To:	S. Lewis
Dated:	11/02/89
MRID(s):	None

CBRS No.:	5557 and 5558
Subject:	PP#6F3362/FAP#6H5493. Metalaxyl and Mancozeb on Grapes. Evaluation of Amendment Dated June 23, 1989.
From:	G. Otakie
To:	S. Lewis
Dated:	12/11/89
MRID:	41150101

CBRS No.:	6176
Subject:	PP#8F3698. Metalaxyl: Tolerances for Crop Grouping: Root and Tuber Vegetables. Amendment of December 7, 1989. Revised Section B.
From:	J. Garbus
To:	S. Lewis and B. Chambliss
Dated:	02/14/90
MRID(s):	None

CBRS No.:	5934, 5935, 6545
Subject:	PP#8F3617/FAP#8H5554. Metalaxyl on Sugar Beet Tops and Roots; Legume Vegetables (Dry and Succulent) Crop Group; Legume Vegetables Foliage Crop Group; Grass Forage, Fodder, and Hay Crop Group; and Non-grass Animal Feeds Crop Group.
From:	F. Griffith
To:	S. Lewis and Toxicology Branch (HED)
Dated:	04/30/90
MRID:	41250101 and 41055203

CBRS No.:	7193
Subject:	Ciba-Geigy Corp.: Response to the Metalaxyl Reregistration Standard: Storage Stability and Sample Histories and Multiresidue Protocol Data.
From:	R. Perfetti, CBRS, HED
To:	R. Engler, HED and L. Rossi, SRRD
Dated:	01/15/91
MRID(s):	41449001, 41055203, and 40534803

CBRS No.:	7418
Subject:	OK-900005. Metalaxyl on Spinach. 24(c) Special Local Needs Registration for (1) Decreased PHI, (2) Additional Applications, and (3) Use of the Granular Formulation
From:	M. Metzger, CBRS, HED
To:	S. Lewis/J. Stone, RD
Dated:	01/24/91
MRID:	40790201

CBRS No.:	7165
Subject:	EPA Reg. No. 100-628. Ridomil 5G (Metalaxyl) Add Use on Spinach. Additional Residue Studies Submitted 9/19/90 in Response to DEB 2/14/89 Review.
From:	K. Dockter, CBRS, HED
To:	S. Lewis/B. Chambliss, RD
Dated:	02/19/91
MRID:	41636201

CBTS No.:	7340
Subject:	PP#1E3926. Evaluation of Analytical Method(s) and Residue Data. Metalaxyl on Ginseng.
From:	G. Otakie
To:	H. Jamerson and Toxicology Branch (HED)
Dated:	02/22/91
MRID(s):	41688900 and 41688901

CBRS No(s).:	7787
Subject:	PP#1E3926. Metalaxyl on Ginseng - Amendment of March 21, 1991
From:	G. Otakie
To:	H. Jamerson and Toxicology Branch (HED)
Dated:	04/08/91
MRID(s):	None

CBTS No.:	9011
DP Barcode:	D169779
Subject:	PP#1F3993. Metalaxyl. Tolerance Petition for Residues in Cereal Grains, Soybeans, Potatoes, Peanuts, Cottonseed, Sunflower Seed, and Hops. Evaluation of Residue Data and Analytical Methodology. HED # 2-0630.
From:	J. Morales, CBTS, HED
To:	S. Lewis, RD, and Toxicology Branch, HED
Dated:	06/19/91
MRID(s):	41870101, -02, -03, -04, -05, -06, -07, and -08

CBRS No(s).:	7171
Subject:	PP#0F3893. Metalaxyl Technical: (Ridomil®2E). Tolerance in/on Leafy Vegetables (Excluding Brassica Vegetables, Excluding Spinach). Analysis of Residue Data and Analytical Method.
From:	S. Bacchus
To:	B. Chambliss and S. Lewis
Dated:	06/21/92
MRID(s):	41587800 and 41587801

CBRS No(s).:	7646 and 7647
Subject:	PP#8F3362/FAP#6H5493-Metalaxyl on Grapes--Evaluation of Amendment Dated January 25, 1991
From:	G. Otakie, CBTS, HED
To:	S. Lewis, RD, and Toxicology Branch, HED
Dated:	09/09/91
MRID(s):	41664503 through 41664506

CBTS No.:	8582
DP Barcode:	D168812
Subject:	PP#1E4024. Metalaxyl on Cranberries. Evaluation of Residue Data and Analytical Methodology.
From:	J. Morales, CBTS, HED
To:	H. Jamerson, RD, and Toxicology Branch, HED
Dated:	10/31/91
MRID:	41996401

CBRS No.:	8625
DP Barcode:	D169183
Subject:	ID#100-TEN. Ridomil®/Copper 70W Fungicide (Metalaxyl/Copper Hydroxide) "Me Too." For Foliar Use on Carrots, Cucurbits, Peppers, Potatoes, Radishes, Spinach, and Tomatoes. Accession Nos. 251021 and 262112.
From:	K. Dockter, CBRS, HED
To:	C. Giles-Parker, RD
Dated:	12/12/91
MRID:	41718301

CBTS No.:	8898
DP Barcode:	D171050
Subject:	PP#0F3893: Metalaxyl (Ridomil 2E, 5G) In/On Leafy Vegetables (Excluding Spinach). Amendment of 9/9/91.
From:	R. Lascola, CBTS, HED
To:	B. Chambliss/S. Lewis, RD
Dated:	12/18/91
MRID(s):	42021101

CBRS No.:	9054 and 9058
Subject:	EPA Reg. Nos. 100-628, 100-607. Amended Registration of Metalaxyl in/on Ginseng.
From:	W. Chin
To:	S. Lewis
Dated:	03/06/92
MRID(s):	41688900 and 41688901

CBRS No.:	8166
DP Barcode:	D165608
Subject:	Metalaxyl. Ciba-Geigy Response to the Reregistration Standard: Product Chemistry Data, Storage Interval Data, and Corn Fodder Data.
From:	J. Abbotts, CBRS, HED
To:	L. Rossi, SRRD
Dated:	04/16/92
MRID(s):	41912901, -02, and 03

CBTS No.:	9710
DP Barcode:	D176810
Subject:	PP#0F3893. Metalaxyl (Ridomil 2E, 5G) In/On Leafy Vegetables (Excluding Brassica, Excluding Spinach). Amendment of 3/17/92.
From:	R. Lascola, CBTS, HED
To:	B. Chambliss/S. Lewis, RD
Dated:	05/12/92
MRID(s):	None

CBRS No.:	8043
DP Barcode:	D164655
Subject:	Metalaxyl. Ciba-Geigy Response to Guidance Document (FRSTR) Dated 9/88.
From:	L. Cheng, CBRS, HED
To:	L. Rossi, SRRD
Dated:	06/01/92
MRID(s):	41870301 through -07

CBRS No.:	9596
DP Barcode:	D175852
Subject:	Ciba-Geigy Corp.: Response to the Metalaxyl Reregistration Standard: Residue and Processing Data
From:	R. Perfetti, CBRS, HED
To:	W. Burnam, HED/L. Rossi, SRRD
Dated:	06/22/92
MRID:	42233501

CBTS No.:	9537
DP Barcode:	D175506
Subject:	PP#1E4024. Metalaxyl on Cranberries. Amendment to Review of 10/31/91.
From:	J. Morales, CBTS, HED
To:	H. Jamerson, RD, and Toxicology Branch, HED
Dated:	07/17/92
MRID(s):	None

CBRS No(s).:	12312
DP Barcode(s):	D193692
Subject:	Registration for Application of Ridomil MZ58® (Metalaxyl + Mancozeb, EPA Reg #100-629) to Potatoes with a Rotation to Corn. Request to Change the Rotational Crop Restriction on Corn from 12 to 9 Months. Submission of the Rotational Crop Data Requested in the CBTS Memo of 05/05/93.
From:	G. Herndon
To:	S. Lewis and D. Greenway
Dated:	08/16/93
MRID(s):	41870308

CBRS No(s).:	10743 and 10744
DP Barcode(s):	D183657 and D183659
Subject:	Metalaxyl. Label Amendments for Peanuts. Ridomil PC 11G (EPA Reg. No. 100-664), Ridomil PC (EPA Reg. No. 100-713)
From:	L. Cheng, CBRS, HED
To:	B. Chambliss, RD
Dated:	11/24/92
MRID(s):	None

CBRS No.:	9342
Subject:	PP#2F04072: 1. Metalaxyl (Ridomil® 2E Fungicide, EPA Reg. No. 100-607) In or On Members of the Brassica (Cole) Leafy Vegetables Crop Grouping; Evaluation of Request for Amended Registration, Analytical Method, and Residue Data of Mustard Greens.
From:	M. Peters, CBTS, HED
To:	B. Chambliss/S. Lewis, RD
Dated:	01/15/93
MRID(s):	None

CBTS No(s).:	11708 and 11709
DP Barcode(s):	D189772 and D189764
Subject:	LA-920004 Metalaxyl (Ridomil®) - Special Local Need [24(c)] Registration and Amended Use Registration for EPA Registration Number 100-607 (Ridomil® 2E Fungicide) on Water Seeded Rice. Review of Amendment with New Magnitude of the Residue Data - Crop Field Trials.
From:	F. Griffith, CBTS, HED
To:	J. Fairfax/S. Lewis, RD
Dated:	05/05/93
MRID(s):	42259805

CBRS No.: 11238
DP Barcode: D187081
Subject: Metalaxyl Reregistration. Registrant Ciba-Geigy Submission on Magnitude of the Residue in Peanuts and Processed Commodities of Rice, Sunflower, and Pineapple.
From: J. Abbotts, CBRS, HED
To: L. Rossi, SRRD
Dated: 07/22/93
MRID(s): 42498701 and -02

CBRS No.: None
Subject: *Metalaxyl (113501) Ruminant and Poultry Metabolism: HED Metabolism Committee* Meeting Held September 8, 1993.
From: S. Hummel, CBRS, HED
To: HED Metabolism Committee
Dated: 09/10/93
MRID(s): None

CBRS No.: 9102
DP Barcode: D172350
Subject: Metalaxyl (113501) Additional Ruminant and Poultry Metabolism Data Poultry Feeding Study.
From: S. Hummel, CBRS, HED
To: C. Peterson/W. Waldrop, SRRD
Dated: 09/15/93
MRID(s): 42115801 to -10

CBTS No.: 9338
DP Barcode: D173024
Subject: PP#2F04063, Metalaxyl In or On the Grass Forage, Fodder, and Hay Crop Grouping. Evaluation of Analytical Method and Residue Data (Ridomil® 2E Fungicide, EPA Reg. No. 100-607).
From: M. Peters, CBTS, HED
To: B. Chambliss, RD
Dated: 09/22/93
MRID(s): 42134500 and -01

CBRS No.: 10833
DP Barcode: D183914
Subject: PP#1F3993. Proposed Metalaxyl Tolerances
From: D. Miller, SA, HSO, USPHS
To: B. Chambliss, RD
Dated: 9/30/93
MRID(s): None

CBRS No.: 12888
DP Barcode: D197066
Subject: Metalaxyl (113501) Storage Stability Data Interim.
From: S. Hummel, CBRS, HED
To: P. Perreault/L. Propst, SRRD
Dated: 02/17/94
MRID(s): 42919401

MASTER RECORD IDENTIFICATION NUMBERS

00071601 Fischer, W.C.; Cassidy, J.E. (1978) Balance and Metabolism of [Phenyl]-14C-CGA-48988 in Potatoes: M6-69-1P, 1S: Report No. ABR-78001. (Unpublished study received Apr 15, 1981 under 100-607; submitted by Ciba-Geigy Corp., Greensboro, N.C.; CDL:070018-A)

00071602 Foster, R.A.; Fischer, W.C.; Cassidy, J.E. (1978) Uptake of [Phenyl]-14C-CGA-48988 in Potatoes Grown in a Field Plot - Preparation of Rotational Plots: M6-69-2P, 2S; Report No. ABR-78013. (Unpublished study received Apr 15, 1981 under 100-607; submitted by Ciba-Geigy Corp., Greensboro, N.C.; CDL:070018-B)

00071603 Honeycutt, R.C.; Fischer, W.C.; Madrid, S.; et al. (1980) Uptake, Balance and Metabolism of [Phenyl]-14C-CGA-48988 in Field Grown Potatoes: M11-69-14P, 14S; Report No. ABR-80042. (Unpublished study received Apr 15, 1981 under 100-607; submitted by Ciba-Geigy Corp., Greensboro, N.C.; CDL:070018-C)

00071604 Honeycutt, R.C.; Cassidy, J.E. (1980) Translocation of [Phenyl]-14C-CGA-48988 and Metabolites from Leaves into Potato Tubers: M11-69-12P, 12S; Report No. ABR-80048. (Unpublished study received Apr 15, 1981 under 100-607; submitted by Ciba-Geigy Corp., Greensboro, N.C.; CDL:070018-D)

00071605 Gross, D. (1977) Metabolism of CGA 48 988 in Field Grown Potato Plants: Project Report 30/77. (Unpublished study received Apr 15, 1981 under 100-607; prepared by Ciba-Geigy Ltd., Switzerland, submitted by Ciba-Geigy Corp., Greensboro, N.C.; CDL:070018-F)

00071606 Gross, D. (1978) Metabolism of CGA 48 988 in Grapevine: Project Report 11/78. (Unpublished study received Apr 15, 1981 under 100-607; prepared by Ciba-Geigy Ltd., Switzerland, submitted by Ciba-Geigy Corp., Greensboro, N.C.; CDL:070018-F)

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