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

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

DEC 27 1994

MEMORANDUM

SUBJECT: **Iprodione**. Storage Stability Data. Reregistration Case No. 2335. Chemical No. 109801. MRID #43273401 DP Barcode D206161 CBRS #14162

FROM: Steven A. Knizner, Chemist
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THRU: Edward Zager, Chief
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TO: William Wooge, PM Team 52
Special Review and Registration Division (7505C)

In response to the Iprodione Phase 4 Review (C. Olinger, 3/15/92), Rhone-Poulenc Ag Company has submitted data (1994; MRID 43273401) depicting the storage stability of residues of iprodione and its metabolites in/on various raw agricultural and processed commodities. These data have been review by Dynamac Corp. under contract to the Agency and have undergone secondary review to reflect Branch policies.

Recommendations

The submitted storage stability study is acceptable and may be used to satisfy GLN 171-4(e) requirements for reregistration purposes with respect to plant commodities. With respect to animal commodities, the registrant is reminded that adequate storage stability data are required to support livestock feeding studies.

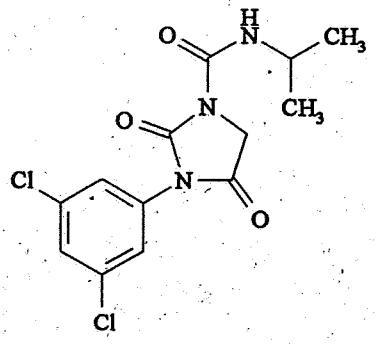
In general, there was no significant decline of residues of iprodione, its isomer, and its metabolite in all racs and processed commodities observed over the duration of the study (12 months).

1/34

The raw agricultural and processed commodities represented in the present study more than adequately cover the minimum number of crops and processed fractions for which storage stability studies are required according to the 1993 guidance on the generation of data for this residue chemistry topic/guideline. Adequate frozen storage stability data reflecting storage intervals up to 12 months are now available for representative raw agricultural commodities of oilseeds, non-oily grains, leafy vegetables, root crops, and fruit and fruiting vegetables as well as processed commodities of oilseeds, grains, and fruits.

cc: S.F., circ., R.F., List B File, S.Knizner
RDI: W. Smith, B. Cropp-Kohlligian, L.Edwards, P.Deschamp, C. Olinger, 12/21/94, M.Metzger, 12/27/94
7509C:CBRS:CM#2:305-6903:SAK:sak:Iprodion\stabil:12/21/94

IPRODIONE



Shaughnessy No. 109801; Case 2335

(CBRS No. 14162; DP Barcode D206161)

Task 4

REGISTRANT'S RESPONSE TO RESIDUE CHEMISTRY DATA REQUIREMENTS

BACKGROUND

In response to the Iprodione Phase 4 Review (C. Olinger, 3/15/92), Rhone-Poulenc Ag Company has submitted data (1994; MRID 43273401) depicting the storage stability of residues of iprodione and its metabolites in/on various raw agricultural and processed commodities. These data are reviewed herein for adequacy in fulfilling residue chemistry data requirements for the reregistration of iprodione. The Conclusions and Recommendations stated in this review pertain only to the storage stability of iprodione residues of concern in/on raw agricultural and processed commodities; other residue chemistry data requirements specified in the Iprodione Phase 4 Review are not addressed herein.

The qualitative nature of iprodione residues in plants is adequately understood. The residues of concern are those which are presently included in the tolerance expression. The nature of iprodione residues in animals is not adequately understood; an additional ruminant metabolism study was required in the Phase 4 Review to validate the data collection and regulatory methods.

The storage stability of iprodione residues of concern in/on kiwifruit was investigated in conjunction with the registrant's effort to upgrade the existing field residue database for kiwifruit (DP Barcode D184060, CBRS No. 10807, B. Cropp-Kohlligian, 1/27/94). Iprodione residues of concern declined 33% in/on kiwifruit following storage of samples for 34 days at -18 C. As a result of residue decline, the Branch recommended correcting for residue decline for tolerance reassessment purposes on this commodity.

Tolerances for residues of iprodione in/on various raw agricultural commodities and processed food/feed commodities are currently expressed in terms of iprodione [3-(3,5-dichlorophenyl)-*N*-(1-methylethyl)-2,4-dioxo-1-imidazolidinecarboxamide], its isomer [3-(1-methylethyl)-*N*-(3,5-dichlorophenyl)-2,4-dioxo-1-imidazolidinecarboxamide], and its metabolite [3-(3,5-dichlorophenyl)-2,4-dioxo-1-imidazolidinecarboxamide] [40 CFR 180.399 (a) and (c), 40 CFR §185.3750 and 40 CFR §186.3750]. Tolerances for residues of iprodione in/on animal commodities are expressed in terms of iprodione [3-(3,5-dichlorophenyl)-*N*-(1-methylethyl)-2,4-dioxo-1-imidazolidinecarboxamide], its isomer [3-(1-methylethyl)-*N*-(3,5-dichlorophenyl)2,4-dioxo-1-imidazolidinecarboxamide], and its metabolites [3-(3,5-dichlorophenyl)-2,4-dioxo-1-imidazolidinecarboxamide and *N*-(3,5-dichloro-4-hydroxyphenyl)-ureidocarboxamide] [40 CFR §180.399 (b)]. An adequate analytical method is available for enforcing the tolerance in kiwi fruit; this method is listed in the Pesticide Analytical Manual (PAM) Vol. II as Method I. Method I is a GLC/ECD method with Florisil column clean up. An adequate analytical method, Rhone-Poulenc Method 151 is available for tolerance enforcement in/on dry, succulent, oily, and non-oily crops. This method has been sent to FDA for inclusion in PAM II. Until it is published in PAM II, the method is available from Public Response and Program Resources Branch, Field Operations Division (H7506C).

Codex MRLs exist for iprodione residues in/on various fruit and vegetable commodities; MRLs are expressed in terms of iprodione *per se*. Issues concerning harmonization of the Codex MRLs with U.S. tolerances will be addressed when reregistration eligibility decisions for iprodione are made.

CONCLUSIONS AND RECOMMENDATIONS

1a. The submitted storage stability study is acceptable and may be used to satisfy GLN 171-4(e) requirements for reregistration purposes. The data from this study indicate that fortified residues of iprodione, its isomer RP-30228, and metabolite RP-32490 are relatively stable under frozen storage conditions (-10 C, whole commodity kept in Nalgene® polyethylene containers) for at least 12 months in/on representative raw agricultural commodities of the following crop groups: root and tuber vegetables (carrots and ginseng), bulb vegetables (dry onions bulbs and garlic), leafy vegetables (lettuce), Brassica (cole) leafy vegetables (broccoli), fruiting vegetables (peppers and tomatoes), cucurbit vegetables (cucumbers), pome fruits (apples), stone fruits (peaches), small fruits and berries (blueberries, grapes, and strawberries), tree nuts (almond nutmeat and hulls), cereal grains (field corn grain, rice grain, and rice straw), and miscellaneous commodities (canola seed, cottonseed, peanut nutmeat, peanut hulls, peanut hay, peanut vines, and tobacco). In general, there was no significant decline of residues observed over the duration of the study.

1b. Data from the same study indicate that fortified residues of iprodione, its isomer RP-30228, and metabolite RP-32490 are stable under frozen storage conditions for at least 12 months in the processed fractions of canola (presscake, crude oil, and refined oil), grapes (juice, wet pomace, dry pomace, raisins, and raisin waste), peanuts (meal, crude oil, refined oil), potatoes (chips and granules), and rice (polished grain, hulls, and bran).

2. The raw agricultural and processed commodities represented in the present study more than adequately cover the minimum number of crops and processed fractions for which storage stability studies are required according to the 1993 guidance on the generation of data for this residue chemistry topic/guideline. Adequate frozen storage stability data reflecting storage intervals up to 12 months are now available for representative raw agricultural commodities of oilseeds, non-oily grains, leafy vegetables, root crops, and fruit and fruiting vegetables as well as processed commodities of oilseeds, grains, and fruits.

3a. We recommend that samples from all outstanding and future iprodione field trials and processing studies be analyzed within the interval (12 months) that fortified residues of iprodione, its isomer RP-30228, and metabolite RP-32490 have been found to be stable under frozen storage conditions in/on various commodities.

3b. Several field residue studies that were determined to be candidates for Phase 5 review have yet to be fully evaluated; additional storage stability data may be required if samples were stored for periods substantially longer than 12 months. The available storage stability data tentatively validate the storage conditions and maximum storage intervals (where provided) of samples from studies that were discussed in the Phase 4 Review (C. Olinger, 3/15/91) for the following commodities: almonds, beans (dry and succulent), caneberries, cherries, peaches, peanut hay or hulls, and peanut nutmeat.

4. With respect to animal commodities, the registrant is reminded that adequate storage stability data are required to support livestock feeding studies. Presently, a poultry feeding study is ongoing (DP Barcode D203214, CBRS No. 13723, S. Knizner, 9/22/94). The Branch noted (DP Barcode D204278, CBRS No. 13863, S. Knizner, 8/1/94) that the adequacy of the existing ruminant feeding study cannot be determined until a Phase 5 review of this study has been completed. The Phase 4 Review noted that iprodione and the non-hydroxylated metabolites appear to be stable for 22 months in milk and 13 months in liver. The hydroxylated metabolite appears to be stable in milk for 13 months.

DETAILED CONSIDERATIONS

Residue Analytical Methods

Samples of raw agricultural and processed commodities from the storage stability study were analyzed for residues of iprodione, its isomer 3-(1-methylethyl)-*N*-(3,5-dichlorophenyl)2,4-dioxo-1-imidazolidinecarboxamide (RP-30228), and its metabolite 3-(3,5-dichlorophenyl)-2,4-dioxo-1-imidazolidinecarboxamide (RP-32490) by Rhone-Poulenc (Research Triangle Park, NC) using a reverse-phase HPLC/UV method with a limit of quantitation (LOQ) of 0.25 ppm entitled "Method of Determination for Iprodione (RP-26019), its Isomer (RP-30228), and its Metabolite (RP-32490) in Various Raw Agricultural Commodities and Processing Fractions."

Samples of grapes, grape juice, canola presscake, and tobacco leaf were prepared for residue extraction by adjusting the pH to 3.1-4.0 using either 0.1 N HCl or 0.1 N NaOH. The residues in/on pH-adjusted samples and remaining ground or processed samples were extracted by shaking with acetonitrile:pH 3.1-3.7 water (10:1, v:v). Grapes, grape juice, and canola presscake in acetonitrile:water were then transferred to a blender where they were homogenized with acidified water (pH 3.1-3.7); all remaining samples, except apples, blueberries, cucumbers, lettuce, peaches, strawberries, and tomatoes were homogenized in the blender with acetonitrile. The resulting homogenates were vacuum filtered, and partitioned with hexane; grape and grape juice samples were subjected to a single hexane rinse, tobacco leaf samples were partitioned four times, and remaining substrates were partitioned three times. The acetonitrile:water extracts were collected and combined then rotary evaporated and dissolved in hexane:methylene chloride (50:50, v:v). Acidified water (pH 3.1-3.7) was added to crops for which residues adhere to the collection flask. The resulting extracts were purified on a Florisil column, then reduced by rotary evaporation with acetonitrile and dissolved in acetonitrile:pH 3.0-3.5 water (60:40, v:v). The acetonitrile:water extracts of apples, blueberries, cucumbers, lettuce, peaches, strawberries, and tomatoes were purified on the Florisil column and prepared directly for HPLC analysis. Garlic, ginseng, onions, peanut vine, hay, and hulls, and tobacco leaf extracts were further cleaned up by GPC.

The prepared samples were analyzed for iprodione, its isomer RP-30228, and metabolite RP-32490 by HPLC/UV. Standards of iprodione and RP-30228 were prepared in acetonitrile; the RP-32490 standard was prepared in acetonitrile:methylene chloride (35:65, v:v). Analysis of high-moisture, non-oily and oily crops was conducted on an HPLC system equipped with a Phase-Sep C-8 5-μ column and a UV detector set at 200 or 210 nm. For high-moisture crops an isocratic mobile phase of pH 3.1-3.7 water:acetonitrile (40:60, v:v) was used; for non-oily and oily crops a gradient mobile phase of pH 3.1-3.7 water:acetonitrile changing from 70:30 (v:v) to 10:90 (v:v) to 70:30 (v:v) was used. For those matrices which require additional GPC clean up, an Alltima C-18 5-μ column was used, along with a gradient mobile phase of pH 3.1-3.7 water:acetonitrile changing from 70:30 (v:v) to 10:90 (v:v) to 100:0 (v:v). Iprodione and

its metabolites were quantitated in the samples by comparison of peak area responses with those of the standards.

The registrant provided concurrent method recoveries for raw agricultural and processed commodities included in the storage stability study by separately fortifying untreated samples with iprodione, RP-30228, and RP-32490 at 2.5 and 5.0 ppm. CBRS notes that peanut nutmeat samples were fortified at 2.5 ppm only and that wet pomace for grapes was fortified at 5.0 ppm only. Although method recovery data were not presented for onions and raisins, these commodities are adequately represented by data for garlic and raisin waste. The registrant indicated that supporting raw data for the method validation were located in Appendix VI of the submission; however, only data pertaining to the storage stability study were located in this volume by the study reviewer.

Method recoveries from storage stability samples separately fortified with iprodione, RP-30228, and RP-32490 are presented in Table 1. Although some method recoveries were outside the 70-120% range, the data submitted here indicate that the reversed-phase HPLC/UV method is adequate for collection of residues of iprodione, RP-30228, and RP-32490 from various raw agricultural and processed commodities for purposes of this storage stability study. We note that this method differs from the residue analytical method used in the magnitude of the residue studies submitted by the registrant chiefly in that iprodione and its metabolites were not hydrolyzed to a common moiety nor derivatized prior to quantitation.

Table 1. Concurrent method recoveries from storage stability study samples separately fortified with iprodione, RP-30228, and RP-32490.

Crop Group: Commodity	Fortification Level (ppm)	Percent Recovery [a]		
		Iprodione	RP-30228	RP-32490
Raw Agricultural Commodities				
Root and Tuber Vegetables Group: Carrots	2.5	88-91	101-109, 136	131-138
	5.0	83-97	73-102	111-120
Root and Tuber Vegetables Group: Ginseng	2.5	56, 61, 78, 89	66, 68, 73, 74	75-101
	5.0	111-119	93-98	113-119
Bulb Vegetables Group: Garlic	2.5	85-96	56, 63, 70, 74	83-112
	5.0	81-87	67, 68, 75, 79	85-89
Leafy Vegetables Group: Lettuce	2.5	94-96	94-102	93-99
	5.0	81-94	84-95	76-86
Brassica Leafy Vegetables Group: Broccoli	2.5	84-90	92-97	74-91
	5.0	83-93	72-83	114-120, 121
Fruiting Vegetables Group: Peppers	2.5	89-92	79-93	117, 121-126
	5.0	84-105	84-104	110, 120, 123, 131
Fruiting Vegetables Group: Tomatoes	2.5	90-94	86-92	84-90
	5.0	91-96	94-96	86-91
Cucurbit Vegetables Group: Cucumbers	2.5	92-98	89-94	98-101
	5.0	89-101	89-101	89-98
Pome Fruits Group: Apples	2.5	89-99	107-116	91-101
	5.0	80-91	72-89	74-86
Stone Fruits Group: Peaches	2.5	94-97	88-99	90-97
	5.0	88-95	83-89	84-88
Small Fruits and Berries Group: Blueberries	2.5	85-93	83-106	89-102
	5.0	88-89	85-90	86-96
Small Fruits and Berries Group: Grapes	2.5	75-119	83, 117, 123, 140	93-119, 123
	5.0	73-104	119, 126-165	60, 110, 120, 122
Small Fruits and Berries Group: Strawberries	2.5	92-98	95-99	91-98
	5.0	94-103	93-102	76-94
Tree Nuts Group: Almonds, nutmeat	2.5	86-103	80-102	89-92, 126
	5.0	74-92	81-89	87-95
Tree Nuts Group: Almonds, hulls	2.5	81-101	88-110	92-99
	5.0	86-93	79-88	120, 121-125
Cereal Grains Group: Corn, field, grain	2.5	83-86	79-85	78-96
	5.0	85-106	83-103	111, 117, 123, 123

(continued; footnotes follow)

Table 1 *(continued)*.

Crop Group: Commodity	Fortification Level (ppm)	Percent Recovery [a]		
		Iprodione	RP-30228	RP-32490
Cereal Grains Group: Rice, grain	2.5	88-91	77-88	116, 142-151
	5.0	89-94	70-91	113, 138-145
Cereal Grains Group: Rice, straw	2.5	57, 70-87	49-60	49-61
	5.0	75-80	67, 70-74	69, 71-78
Misc. Commodities: Canola, seed	2.5	60-65, 94	74-83	84-110
	5.0	75-86 (3)	68, 78-82	79-88
Misc. Commodities: Cotton, seed	2.5	125-138	89-92	122-128 (3)
	5.0	74-91, 125	82-110	106-120
Misc. Commodities: Peanuts, nutmeat	2.5	78-87	57-68	107-115
Misc. Commodities: Peanuts, hulls	2.5	73-100	82-101	95-107
	5.0	82-88	89-95	92-102
Misc. Commodities: Peanuts, hay	2.5	87-106	71-107	69, 74-82
	5.0	50, 91-98	73-83	84-92
Misc. Commodities: Peanuts, vines	2.5	81-100	68, 70-81	75-91
	5.0	81-92	76-83	43, 79-90
Misc. Commodities: Tobacco	2.5	67, 70-73	74-81	74-84
	5.0	49, 76-89	86-107	87-110
Processed Commodities				
Oilseed: Canola, presscake	2.5	83-93	82-89	86-102
	5.0	78-117	75-81, 128	87-106, 130
Oilseed: Canola, oil, crude	2.5	76-104	90-96	110-115, 124
	5.0	86-94	80-90	119, 121-141
Oilseed: Canola, oil, refined	2.5	95-104	97-100	118, 120, 124, 127
	5.0	88-97	63, 92-94	102-108
Oilseed: Peanuts, meal	2.5	78-82	76-80	64, 103-110
	5.0	88	81-85	124-130
Oilseed: Peanuts, oil, crude	2.5	101-109	96-105	124-145
	5.0	79-87	78-86	110-117
Oilseed: Peanuts, oil, refined	2.5	86-91	81-87	129-134
	5.0	79-84	79-88	87-96
Non-Oily Grain: Rice, polished	2.5	90-93	87-88	111-118
	5.0	93-96	85-89	124-129

(continued; footnotes follow)

Table 1 *(continued)*.

Crop Group: Commodity	Fortification Level (ppm)	Percent Recovery [a]		
		Iprodione	RP-30228	RP-32490
Non-Oily Grain: Rice, Hulls	2.5	105-118, 124	70-90	125-136
	5.0	91-105 (3)	85-88 (3)	98-104 (3)
Non-Oily Grain: Rice, bran	2.5	77-105	102-113, 133	105-110
	5.0	78-80	85-88	97-102
Fruit/Fruiting Vegetable; Grapes, pomace, wet	5.0	92-97	88-98	99-104
Fruit/Fruiting Vegetable: Grapes, pomace, dried	2.5	127-133	58-59, 77	101-106
	5.0	102-106	88-97	115-116
Fruit/Fruiting Vegetable: Grapes, raisin, waste	2.5	92-110	90-98	95-101
	5.0	83-98, 122	86-105, 129	84-107
Fruit/Fruiting Vegetable: Grapes, juice	2.5	87-115	84, 123-138	106-119, 130
	5.0	78-90	56, 75-77	137-143
Potatoes, chips	2.5	78-98	74-94	90-111
	5.0	92-97	85-90	106-116
Potatoes, granules	2.5	91-97	90-94	103-117
	5.0	90-110	79-90	87-104

[a] Four samples analyzed at each fortification level unless otherwise noted in parentheses ().

Storage Stability Data

Rhone-Poulenc submitted data (1994; MRID 43273401) depicting the frozen storage stability of residues of iprodione, its isomer RP-30228, and metabolite RP-32490 in various raw agricultural and processed commodities. The registrant stated that raw agricultural and processed crop substrates were received from various sources, including Rhone-Poulenc field studies, and that some raw agricultural and processed commodities (such as canola refined oil) were store bought. Processed fractions which were not commercially available were provided by the Texas A&M University System or by Rhone-Poulenc. Samples were placed in Nalgene® polyethylene containers and fortified separately with iprodione, RP-30228, and RP-32490 at 5.0 ppm. The fortified and non-fortified samples were stored frozen at -10 C. Duplicate samples were extracted and analyzed immediately after fortification, and after 3, 6, 9, and 12 months of frozen storage, with the following exceptions: cucumbers were analyzed at 0, 3, 9, 12, and 21 months, grapes were analyzed at 0, 3, 6, 9, 12, and 15 months, and tobacco leaf was analyzed at 0 months and 10 weeks due to time constraints related to completing the study. Samples were analyzed within 0-25 days of extraction.

The registrant reported that apparent residues of iprodione, RP-30228, and RP-32490 in/on unfortified samples of each commodity at each storage interval were near or slightly above the 0.25-ppm LOQ; no raw data reflecting analysis of unfortified samples were submitted. The results of the storage stability study are presented in Table 2.

Table 2. Storage stability and concurrent method recoveries (fresh fortification recovery) of iprodione residues of concern from samples of raw agricultural commodities fortified separately with iprodione, its isomer RP-30228, and metabolite R-32490 at 5.0 ppm and stored frozen at -10 C.

Analyte	Storage Period (Months)	Fresh Fortification Recovery (%)	Apparent Recovery in Stored Samples (%)	Corrected Recovery in Stored Samples (%)
Root and Tuber Vegetables: Carrots				
Iprodione	0	87	82, 89	94, 102
	3	86	83, 88	97, 103
	6	90	85, 88	95, 97
	9	96	88, 88	91, 91
	12	95	85, 94	89, 99
RP-30228	0	81	82, 86	102, 107
	3	86	85, 98	99, 114
	6	82	64, 93	78, 114
	9	83	77, 80	93, 96
	12	121	103, 120	85, 100
RP-32490	0	105	95, 102	90, 97
	3	85	93, 96	109, 113
	6	87	88, 90	101, 103
	9	115	109, 112	95, 98
	12	125	115, 117	92, 94
Root and Tuber Vegetables: Ginseng				
Iprodione	0	95	61, 95	65, 100
	3	91	87, 91	96, 100
	6	92	90, 92	97, 100
	9	91	88, 95	96, 103
	12	80	77, 77	96, 96
RP-30228	0	77	78, 85	102, 111
	3	91	78, 84	86, 92
	6	118	117, 119	99, 101
	9	77	73, 74	95, 97
	12	79	75, 93	95, 118
RP-32490	0	88	94, 105	107, 119
	3	102	104, 108	102, 105
	6	114	105, 113	92, 99
	9	83	90, 94	109, 114
	12	66	63, 69	95, 104

(continued; footnotes follow)

Table 2 *(continued)*.

Analyte	Storage Period (Months)	Fresh Fortification Recovery (%)	Apparent Recovery in Stored Samples (%)	Corrected Recovery in Stored Samples (%)
Bulb Vegetables Group: Garlic				
Iprodione	0	74	74, 84	101, 114
	3	76	60, 74	78, 98
	6	73	78, 82	107, 112
	9	61	76, 78	124, 128
	12	70	66, 68	94, 98
RP-30228	0	67	56, 75	83, 111
	3	71	54, 66	76, 93
	6	84	91, 95	109, 112
	9	46	72, 78	156, 170
	12	71	74, 76	103, 107
RP-32490	0	85	88, 97	104, 115
	3	104	101, 106	97, 101
	6	94	99, 100	105, 106
	9	86	78, 80	92, 94
	12	82	87, 89	106, 108
Bulb Vegetables Group: Onions, Dry Bulb				
Iprodione	0	107	102, 109	95, 102
	3	99	100, 101	101, 102
	6	89	87, 87	97, 97
	9	92	87, 89	95, 97
	12	80	76, 77	95, 97
RP-30228	0	111	82, 85	74, 77
	3	97	86, 90	89, 93
	6	93	86, 88	93, 95
	9	95	94, 95	98, 99
	12	100	92, 92	92, 92
RP-32490	0	102	94, 96	92, 94
	3	93	105, 108	113, 116
	6	114	110, 115	97, 101
	9	107	93, 93	86, 86
	12	99	90, 91	91, 92

(continued; footnotes follow)

Table 2 *(continued)*.

Analyte	Storage Period (Months)	Fresh Fortification Recovery (%)	Apparent Recovery in Stored Samples (%)	Corrected Recovery in Stored Samples (%)
Leafy Vegetables Group: Lettuce				
Iprodione	0	90	96, 99	106, 109
	3	84	85, 87	101, 103
	6	89	86, 92	96, 103
	9	96	91, 93	95, 97
	12	91	91, 94	100, 103
RP-30228	0	87	92, 95	106, 109
	3	86	82, 85	96, 99
	6	91	82, 85	90, 94
	9	94	81, 91	86, 97
	12	92	85, 87	92, 95
RP-32490	0	83	88, 91	106, 109
	3	112	110, 110	99, 99
	6	118	105, 112	89, 95
	9	108	66, 104	61, 97
	12	99	95, 95	97, 97
Brassica (Cole) Leafy Vegetables Group: Broccoli				
Iprodione	0	93	90, 92	96, 98
	3	94	95, 95	101, 102
	6	91	84, 86	93, 95
	9	109	100, 107	91, 98
	12	92	90, 92	98, 100
RP-30228	0	85	94, 97	112, 115
	3	88	91, 94	104, 107
	6	84	77, 77	91, 91
	9	94	79, 82	84, 87
	12	89	80, 82	90, 92
RP-32490	0	97	94, 97	97, 100
	3	104	97, 98	94, 95
	6	92	87, 87	94, 95
	9	115	106, 109	92, 94
	12	113	110, 112	97, 99

(continued; footnotes follow)

Table 2 *(continued)*.

Analyte	Storage Period (Months)	Fresh Fortification Recovery (%)	Apparent Recovery in Stored Samples (%)	Corrected Recovery in Stored Samples (%)
Fruiting Vegetables Group: Peppers				
Iprodione	0	85	91, 93	107, 110
	3	95	86, 87	91, 91
	6	95	91, 93	96, 98
	9	91	88, 89	96, 97
	12	93	92, 93	100, 101
RP-30228	0	84	87, 89	104, 106
	3	90	85, 85	94, 95
	6	94	90, 92	96, 98
	9	90	84, 85	93, 94
	12	93	89, 90	95, 97
RP-32490	0	102	106, 110	104, 108
	3	102	102, 102	100, 100
	6	108	102, 104	94, 95
	9	96	94, 98	98, 102
	12	110	108, 110	98, 100
Fruiting Vegetables Group: Tomatoes				
Iprodione	0	106	95, 98	90, 93
	3	80	82, 86	102, 107
	6	67	88, 92	131, 137
	9	97	88, 94	91, 97
	12	95	90, 91	95, 95
RP-30228	0	101	89, 92	89, 91
	3	87	74, 78	85, 90
	6	83	68, 82	83, 100
	9	108	88, 89	81, 83
	12	94	85, 88	91, 93
RP-32490	0	101	91, 92	90, 90
	3	86	80, 85	93, 99
	6	104	115, 117	111, 112
	9	96	87, 89	90, 92
	12	104	95, 97	91, 93

(continued; footnotes follow)

Table 2 *(continued)*.

Analyte	Storage Period (Months)	Fresh Fortification Recovery (%)	Apparent Recovery in Stored Samples (%)	Corrected Recovery in Stored Samples (%)
Cucurbit Vegetables Group: Cucumbers				
Iprodione	0	101	97, 106	96, 105
	3	98	86, 90	87, 91
	6 [a]	--	--	--
	9	94	88, 88	94, 94
	12	92	86, 87	93, 94
	21	88	90, 91	101, 103
RP-30228	0	87	83, 85	95, 97
	3	106	97, 102	91, 96
	6 [a]	--	--	--
	9	97	87, 88	90, 90
	12	93	81, 83	87, 89
	21	90	85, 86	94, 96
RP-32490	0	97	87, 93	90, 96
	3	102	94, 97	92, 95
	6 [a]	--	--	--
	9	103	92, 90	88, 90
	12	98	92, 94	94, 96
	21	92	88, 88	96, 96
Pome Fruits Group: Apples				
Iprodione	0	119	85, 98	72, 82
	3	88	80, 85	90, 96
	6	79	70, 78	89, 99
	9	86	75, 79	88, 92
	12	90	82, 87	91, 97
RP-30228	0	115	106, 118	93, 103
	3	90	72, 74	80, 83
	6	71	75, 79	105, 111
	9	98	84, 97	86, 99
	12	89	77, 78	87, 88
RP-32490	0	113	87, 88	77, 78
	3	94	93, 94	99, 101
	6	112	111, 112	99, 100
	9	114	101, 103	89, 91
	12	95	91, 94	96, 98

(continued; footnotes follow)

Table 2 *(continued)*.

Analyte	Storage Period (Months)	Fresh Fortification Recovery (%)	Apparent Recovery in Stored Samples (%)	Corrected Recovery in Stored Samples (%)
Stone Fruits Group: Peaches				
Iprodione	0	96	94, 95	98, 100
	3	90	95, 127	106, 142
	6	93	84, 90	91, 97
	9	86	92, 92	106, 107
	12	92	83, 88	90, 96
RP-30228	0	95	92, 95	96, 100
	3	92	81, 86	88, 94
	6	90	88, 108	97, 120
	9	92	91, 92	98, 99
	12	93	87, 87	94, 94
RP-32490	0	92	88, 94	96, 102
	3	88	83, 86	94, 98
	6	118	109, 117	92, 99
	9	94	93, 96	99, 102
	12	101	90, 93	89, 92
Small Fruits & Berries Group: Blueberries				
Iprodione	0	85	81, 87	96, 102
	3	97	87, 87	90, 90
	6	83	72, 77	86, 92
	9	85	75, 79	88, 94
	12	95	77, 80	81, 84
RP-30228	0	77	76, 76	98, 99
	3	95	73, 77	77, 81
	6	82	70, 78	85, 95
	9	87	68, 71	78, 81
	12	100	80, 81	81, 81
RP-32490	0	95	92, 97	97, 102
	3	113	94, 103	83, 91
	6	119	106, 110	89, 92
	9	87	85, 86	98, 99
	12	94	82, 82	87, 88

(continued; footnotes follow)

Table 2 *(continued)*.

Analyte	Storage Period (Months)	Fresh Fortification Recovery (%)	Apparent Recovery in Stored Samples (%)	Corrected Recovery in Stored Samples (%)
Small Fruits & Berries Group: Grapes				
Iprodione	0	88	83, 87	95, 100
	3	93	90, 93	97, 100
	6	89	89, 90	100, 101
	9	85	89, 91	105, 107
	12	88	84, 88	95, 99
	15	93	90, 93	96, 100
RP-30228	0	78	73, 77	93, 99
	3	93	80, 90	86, 96
	6	86	82, 83	96, 96
	9	71	72, 79	103, 112
	12	92	86, 90	94, 98
	15	87	84, 87	97, 100
RP-32490	0	97	91, 96	94, 99
	3	105	99, 100	94, 95
	6	96	94, 95	98, 99
	9	110	106, 108	96, 98
	12	104	100, 104	96, 100
	15	95	89, 90	93, 94
Small Fruits & Berries Group: Strawberries				
Iprodione	0	95	86, 98	90, 102
	3	95	92, 96	97, 101
	6	98	90, 93	91, 94
	9	92	89, 91	97, 98
	12	92	91, 92	98, 100
RP-30228	0	93	82, 91	88, 98
	3	89	87, 91	98, 102
	6	93	88, 89	95, 96
	9	94	68, 88	72, 94
	12	95	84, 87	89, 92
RP-32490	0	89	93, 95	104, 106
	3	93	71, 93	77, 100
	6	122	107, 119	88, 98
	9	107	103, 105	98, 97
	12	96	86, 90	90, 94

(continued; footnotes follow)

Table 2 *(continued)*.

Analyte	Storage Period (Months)	Fresh Fortification Recovery (%)	Apparent Recovery in Stored Samples (%)	Corrected Recovery in Stored Samples (%)
Cereal Grains Group: Corn, Field, Grain				
Iprodione	0	93	92, 92	99, 100
	3	95	89, 90	93, 95
	6	94	87, 88	93, 94
	9	91	80, 82	88, 90
	12	95	86, 86	90, 91
RP-30228	0	90	89, 91	99, 101
	3	90	83, 88	93, 98
	6	93	85, 85	91, 91
	9	92	81, 84	88, 91
	12	96	81, 82	84, 86
RP-32490	0	109	77, 83	70, 76
	3	113	108, 111	96, 99
	6	111	105, 108	95, 98
	9	99	95, 97	96, 97
	12	91	81, 83	89, 92
Cereal Grains Group: Rice, Grain				
Iprodione	0	67	60, 61	90, 90
	3	72	64, 67	88, 92
	6	90	65, 66	72, 74
	9	89	64, 66	72, 75
	12	69	65, 68	95, 98
RP-30228	0	78	60, 63	76, 81
	3	73	67, 69	92, 95
	6	84	64, 66	76, 78
	9	93	73, 79	79, 85
	12	62	58, 62	94, 100
RP-32490	0	82	64, 64	78, 78
	3	77	71, 77	91, 99
	6	88	69, 78	78, 88
	9	90	79, 82	88, 91
	12	73	64, 74	88, 102

(continued; footnotes follow)

Table 2 *(continued)*.

Analyte	Storage Period (Months)	Fresh Fortification Recovery (%)	Apparent Recovery in Stored Samples (%)	Corrected Recovery in Stored Samples (%)
Cereal Grains Group: Rice, Straw				
Iprodione	0	94	96, 97	103, 103
	3	89	64, 87	72, 97
	6	105	72, 88	68, 84
	9	78	78, 84	99, 107
	12	43	52, 62	122, 146
RP-30228	0	74	77, 85	105, 116
	3	64	66, 75	103, 117
	6	93	55, 83	60, 89
	9	104	92, 96	89, 92
	12	41	82, 102	198, 248
RP-32490	0	100	104, 106	103, 106
	3	109	118, 119	109, 110
	6	108	98, 99	91, 92
	9	91	82, 82	90, 91
	12	98	102, 129	104, 131
Miscellaneous Commodities: Canola, Seed				
Iprodione	0	116	124, 125	106, 108
	3	101	86, 98	86, 97
	6	89	110, 137	124, 154
	9	91	83, 91	91, 100
	12	72	76, 78	105, 107
RP-30228	0	89	87, 90	97, 101
	3	126	73, 121	58, 96
	6	83	68, 85	82, 102
	9	87	70, 72	81, 83
	12	81	52, 57	65, 70
RP-32490	0	125	115, 121	92, 96
	3	129	107, 115	83, 89
	6	97	97, 102	100, 105
	9	91	88, 91	96, 99
	12	100	89, 98	89, 98

(continued; footnotes follow)

Table 2 *(continued)*.

Analyte	Storage Period (Months)	Fresh Fortification Recovery (%)	Apparent Recovery in Stored Samples (%)	Corrected Recovery in Stored Samples (%)
Miscellaneous Commodities: Cotton, Seed				
Iprodione	0	105	80, 132	77, 126
	3	90	98, 100	109, 111
	6	89	92, 95	103, 107
	9	88	94, 97	106, 110
	12	94	92, 96	98, 102
RP-30228	0	86	86, 88	101, 103
	3	90	88, 94	98, 104
	6	95	96, 98	101, 103
	9	73	77, 89	105, 122
	12	95	97, 115	102, 121
RP-32490	0	116	118, 119	102, 102
	3	101	98, 99	97, 98
	6	100	99, 102	99, 102
	9	100	100, 101	99, 100
	12	109	101, 105	92, 96
Miscellaneous Commodities: Peanuts, Nutmeat				
Iprodione	0	87	84, 94	96, 108
	3	93	89, 91	96, 98
	6	94	95, 99	102, 106
	9	97	92, 93	94, 96
	12	86	89, 89	102, 102
RP-30228	0	88	86, 101	98, 115
	3	91	75, 77	83, 85
	6	91	81, 82	89, 90
	9	90	84, 86	94, 96
	12	82	79, 81	96, 99
RP-32490	0	97	90, 95	93, 98
	3	99	90, 92	90, 93
	6	94	85, 86	90, 92
	9	108	103, 103	96, 96
	12	99	97, 99	98, 100

(continued; footnotes follow)

Table 2 *(continued)*.

Analyte	Storage Period (Months)	Fresh Fortification Recovery (%)	Apparent Recovery in Stored Samples (%)	Corrected Recovery in Stored Samples (%)
Miscellaneous Commodities: Peanuts, Hulls				
Iprodione	0	85	52, 88	62, 103
	3	94	76, 90	81, 96
	6	89	61, 79	68, 89
	9	86	82, 85	96, 99
	12	81	78, 83	96, 102
RP-30228	0	77	82, 87	106, 112
	3	86	74, 77	85, 89
	6	102	89, 94	87, 93
	9	75	68, 69	90, 92
	12	89	81, 83	91, 93
RP-32490	0	84	84, 84	99, 100
	3	119	106, 121	89, 102
	6	79	95, 96	120, 121
	9	82	82, 86	101, 106
	12	71	69, 72	97, 101
Miscellaneous Commodities: Peanuts, Hay				
Iprodione	0	104	90, 93	86, 89
	3	105	96, 100	91, 95
	6	107	99, 103	93, 96
	9	79	85, 90	108, 114
	12	80	81, 81	101, 101
RP-30228	0	115	109, 110	94, 96
	3	106	89, 89	84, 84
	6	99	80, 84	80, 85
	9	93	87, 90	94, 96
	12	76	70, 74	92, 98
RP-32490	0	113	96, 101	85, 90
	3	100	95, 99	95, 99
	6	83	86, 88	104, 106
	9	79	85, 86	108, 109
	12	76	77, 78	102, 103

(continued; footnotes follow)

Table 2 *(continued)*.

Analyte	Storage Period (Months)	Fresh Fortification Recovery (%)	Apparent Recovery in Stored Samples (%)	Corrected Recovery in Stored Samples (%)
Miscellaneous Commodities: Peanuts, Vines				
Iprodione	0	80	74, 76	93, 96
	3	70	52, 54	74, 78
	6	66	79, 83	119, 125
	9	90	85, 88	95, 98
	12	90	82, 88	91, 97
RP-30228	0	81	76, 80	95, 100
	3	91	75, 77	82, 85
	6	83	64, 69	77, 83
	9	85	80, 80	94, 94
	12	94	78, 79	83, 85
RP-32490	0	84	82, 83	97, 99
	3	97	68, 75	71, 78
	6	68	60, 88	89, 129
	9	138	113, 146	82, 105
	12	98	85, 91	87, 93
Miscellaneous Commodities: Tobacco				
Iprodione	0	72	72, 73	99, 102
	10 weeks	79	73, 76	92, 96
RP-30228	0	82	79, 82	96, 100
	10 weeks	82	77, 82	95, 100
RP-32490	0	101	105, 108	104, 106
	10 weeks	76	74, 80	97, 105

[a] Six-month samples were not analyzed.
[b] A portion of this sample was lost during extraction procedures.

Table 3. Storage stability and concurrent method recoveries (fresh fortification recovery) of iprodione residues of concern from samples of processed commodities fortified separately with iprodione, its isomer RP-30228, and metabolite R-32490 at 5.0 ppm and stored frozen at -10 C.

Analyte	Storage Period (Months)	Fresh Fortification Recovery (%)	Apparent Recovery in Stored Samples (%)	Corrected Recovery in Stored Samples (%)
Oilseed: Canola, Presscake				
Iprodione	0	92	90, 91	98, 99
	3	88	86, 87	98, 99
	6	102	102, 119	100, 117
	9	97	102, 102	105, 106
	12	94	92, 93	98, 99
RP-30228	0	88	87, 91	99, 103
	3	88	84, 84	95, 95
	6	112	79, 92	71, 81
	9	89	74, 93	83, 104
	12	89	85, 86	95, 96
RP-32490	0	111	103, 103	92, 93
	3	92	75, 92	81, 99
	6	104	91, 95	87, 91
	9	92	96, 97	104, 105
	12	104	100, 111	96, 107
Oilseed: Canola, Oil, Crude				
Iprodione	0	93	82, 84	88, 91
	3	98	67, 67	68, 69
	6	101	78, 83	78, 83
	9	87	68, 79	79, 91
	12	104	82, 87	79, 83
RP-30228	0	84	67, 74	79, 87
	3	84	60, 76	71, 91
	6	83	63, 74	76, 90
	9	76	61, 63	81, 83
	12	82	84, 88	102, 106
RP-32490	0	117	103, 103	88, 88
	3	106	74, 102	70, 97
	6	99	93, 101	94, 102
	9	92	68, 91	74, 99
	12	126	106, 134	84, 106

(continued)

Table 3 *(continued)*.

Analyte	Storage Period (Months)	Fresh Fortification Recovery (%)	Apparent Recovery in Stored Samples (%)	Corrected Recovery in Stored Samples (%)
Oilseed: Canola, Oil, Refined				
Iprodione	0	99	108, 109	109, 110
	3	96	86, 90	90, 93
	6	87	85, 91	98, 105
	9	100	92, 96	92, 96
	12	95	99, 99	104, 104
RP-30228	0	88	88, 90	99, 102
	3	93	83, 85	89, 91
	6	82	73, 76	89, 92
	9	99	90, 93	91, 94
	12	85	83, 91	97, 106
RP-32490	0	107	91, 117	85, 109
	3	95	92, 93	96, 97
	6	106	102, 102	96, 97
	9	101	95, 103	94, 102
	12	90	86, 90	96, 100
Oilseed: Peanuts, Meal				
Iprodione	0	89	88, 88	99, 99
	3	83	47, 75	57, 91
	6	93	88, 88	94, 94
	9	93	86, 89	92, 97
	12	93	92, 93	98, 99
RP-30228	0	92	84, 85	92, 92
	3	93	72, 73	77, 79
	6	94	77, 79	82, 85
	9	91	79, 81	87, 89
	12	91	82, 83	91, 91
RP-32490	0	115	106, 115	91, 100
	3	82	75, 80	91, 97
	6	96	90, 90	94, 94
	9	106	100, 103	94, 97
	12	99	95, 96	96, 97

(continued)

Table 3 *(continued)*.

Analyte	Storage Period (Months)	Fresh Fortification Recovery (%)	Apparent Recovery in Stored Samples (%)	Corrected Recovery in Stored Samples (%)
Oilseed: Peanuts, Oil, Crude				
Iprodione	0	87	89, 92	103, 106
	3	86	85, 86	99, 99
	6	90	82, 84	91, 93
	9	88	85, 87	97, 98
	12	93	90, 91	96, 97
RP-30228	0	88	90, 91	103, 104
	3	84	70, 84	84, 100
	6	77	66, 70	85, 91
	9	73	69, 86	95, 119
	12	85	72, 82	85, 96
RP-32490	0	104	100, 107	97, 103
	3	100	94, 95	94, 95
	6	96	89, 96	93, 99
	9	106	98, 99	92, 94
	12	104	96, 98	93, 94
Oilseed: Peanuts, Oil, Refined				
Iprodione	0	81	83, 90	103, 111
	3	91	90, 91	99, 100
	6	89	87, 88	98, 99
	9	96	95, 95	99, 99
	12	88	87, 88	99, 100
RP-30228	0	79	82, 85	103, 107
	3	93	87, 88	94, 95
	6	91	86, 88	94, 96
	9	87	88, 101	102, 116
	12	91	86, 87	94, 96
RP-32490	0	91	97, 97	106, 107
	3	103	96, 98	92, 95
	6	93	92, 92	98, 98
	9	113	108, 109	95, 96
	12	103	97, 100	94, 97

(continued)

Table 3 *(continued)*.

Analyte	Storage Period (Months)	Fresh Fortification Recovery (%)	Apparent Recovery in Stored Samples (%)	Corrected Recovery in Stored Samples (%)
Non-Oily Grain: Rice, Polished				
Iprodione	0	98	74, 98	75, 100
	3	92	88, 90	96, 98
	6	92	86, 87	94, 94
	9	92	90, 91	98, 99
	12	95	92, 92	97, 97
RP-30228	0	91	92, 94	101, 103
	3	91	85, 87	94, 96
	6	95	85, 87	90, 92
	9	89	86, 87	96, 97
	12	95	92, 94	97, 99
RP-32490	0	99	91, 99	92, 101
	3	100	95, 96	96, 96
	6	92	89, 89	97, 97
	9	108	109, 110	101, 102
	12	121	122, 124	101, 102
Non-Oily Grain: Rice, Hulls				
Iprodione	0	88	85, 87	96, 98
	3	82	128, 129	157, 158
	6	101	95, 97	94, 96
	9	92	84, 86	91, 94
	12	93	94, 95	102, 103
RP-30228	0	83	73, 85	87, 102
	3	105	82, 84	78, 80
	6	102	79, 84	78, 83
	9	97	87, 87	90, 90
	12	104	89, 92	85, 88
RP-32490	0	139	136, 139	98, 101
	3	104	95, 95	91, 92
	6	102	87, 92	85, 90
	9	102	103, 105	101, 102
	12	115	121, 128	105, 111

(continued)

Table 3 *(continued)*.

Analyte	Storage Period (Months)	Fresh Fortification Recovery (%)	Apparent Recovery in Stored Samples (%)	Corrected Recovery in Stored Samples (%)
Non-Oily Grain: Rice, Bran				
Iprodione	0	85	90, 91	106, 107
	3	96	88, 91	91, 95
	6	96	92, 92	96, 96
	9	88	84, 89	96, 101
	12	103	95, 100	92, 97
RP-30228	0	85	88, 89	104, 105
	3	92	90, 98	97, 106
	6	101	99, 100	98, 99
	9	97	114, 119	117, 122
	12	116	86, 114	75, 99
RP-32490	0	100	102, 102	102, 102
	3	124	116, 117	94, 94
	6	115	108, 111	94, 97
	9	99	64, 98	64, 99
	12	102	97, 97	95, 95
Fruit/Fruiting Vegetable: Grapes, Raisins				
Iprodione	0	95	93, 98	98, 103
	3	80	84, 84	105, 106
	6	93	52, 81	56, 87
	9	81	64, 81	79, 100
	12	84	77, 82	92, 98
RP-30228	0	91	94, 97	104, 107
	3	82	85, 86	104, 104
	6	92	81, 83	88, 91
	9	85	72, 72	84, 85
	12	77	57, 75	74, 98
RP-32490	0	101	104, 104	103, 103
	3	102	110, 120	107, 117
	6	92	92, 95	100, 104
	9	94	88, 89	93, 95
	12	88	83, 92	94, 105

(continued)

Table 3 *(continued)*.

Analyte	Storage Period (Months)	Fresh Fortification Recovery (%)	Apparent Recovery in Stored Samples (%)	Corrected Recovery in Stored Samples (%)
Fruit/Fruiting Vegetable: Grapes, Pomace, Wet				
Iprodione	0	92	92, 96	99, 104
	3	98	89, 94	90, 96
	6	77	87, 91	113, 118
	9	95	84, 84	88, 88
	12	101	91, 99	90, 98
RP-30228	0	95	90, 95	94, 100
	3	97	83, 87	85, 89
	6	78	88, 88	112, 113
	9	99	80, 84	81, 85
	12	94	70, 81	75, 86
RP-32490	0	99	99, 99	100, 100
	3	129	119, 122	92, 94
	6	86	96, 96	112, 112
	9	101	89, 89	88, 88
	12	112	105, 119	94, 106
Fruit/Fruiting Vegetable: Grapes, Pomace, Dried				
Iprodione	0	103	103, 106	99, 102
	3	94	77, 82	82, 87
	6	92	83, 89	90, 97
	9	100	84, 91	83, 90
	12	82	81, 86	99, 104
RP-30228	0	102	101, 109	100, 108
	3	81	67, 81	83, 100
	6	92	64, 76	69, 83
	9	89	71, 81	79, 90
	12	93	88, 109	95, 118
RP-32490	0	117	115, 116	99, 99
	3	119	100, 106	84, 89
	6	89	91, 94	102, 105
	9	104	101, 101	96, 97
	12	90	97, 99	108, 110

(continued)

Table 3 *(continued)*.

Analyte	Storage Period (Months)	Fresh Fortification Recovery (%)	Apparent Recovery in Stored Samples (%)	Corrected Recovery in Stored Samples (%)
Fruit/Fruiting Vegetable: Grapes: Raisin Waste				
Iprodione	0	96	84, 89	87, 92
	3	86	60, 73	69, 85
	6	95	63, 69	66, 72
	9	88	54, 68	61, 77
	12	94	61, 80	65, 85
RP-30228	0	94	83, 92	88, 98
	3	87	56, 62	64, 72
	6	89	46, 79	52, 88
	9	88	68, 71	77, 80
	12	94	70, 71	74, 76
RP-32490	0	102	87, 91	85, 89
	3	106	97, 105	92, 99
	6	93	78, 84	84, 90
	9	102	86, 90	84, 88
	12	96	89, 91	92, 94
Fruit/Fruiting Vegetable: Grapes, Juice				
Iprodione	0	88	86, 91	98, 103
	3	92	81, 95	88, 102
	6	91	84, 88	92, 96
	9	84	83, 85	99, 101
	12	86	78, 85	91, 100
RP-30228	0	74	70, 73	95, 99
	3	85	76, 77	89, 91
	6	88	78, 80	88, 91
	9	81	75, 79	93, 97
	12	70	71, 72	103, 103
RP-32490	0	93	92, 93	99, 100
	3	104	96, 102	93, 98
	6	96	91, 92	95, 95
	9	100	99, 100	99, 100
	12	109	107, 108	98, 99

(continued)

Table 3 *(continued)*.

Analyte	Storage Period (Months)	Fresh Fortification Recovery (%)	Apparent Recovery in Stored Samples (%)	Corrected Recovery in Stored Samples (%)
Potatoes, Chips				
Iprodione	0	99	96, 96	97, 97
	3	80	84, 85	105, 106
	6	96	89, 90	93, 94
	9	95	87, 87	91, 91
	12	91	91, 92	101, 101
RP-30228	0	97	95, 96	99, 99
	3	77	83, 84	107, 109
	6	93	88, 90	94, 96
	9	92	84, 84	91, 91
	12	86	85, 92	98, 106
RP-32490	0	115	117, 117	101, 101
	3	104	115, 116	111, 112
	6	104	96, 97	92, 93
	9	105	93, 94	89, 89
	12	101	99, 101	98, 100
Potatoes, Granules				
Iprodione	0	85	87, 89	102, 105
	3	84	74, 79	88, 94
	6	94	73, 73	78, 78
	9	92	80, 83	87, 90
	12	90	75, 79	84, 88
RP-30228	0	84	89, 90	105, 107
	3	83	76, 78	91, 93
	6	91	68, 69	75, 76
	9	94	80, 83	86, 88
	12	89	80, 83	91, 94
RP-32490	0	99	97, 104	98, 105
	3	93	91, 92	98, 99
	6	100	90, 94	90, 94
	9	105	96, 98	92, 93
	12	110	95, 106	86, 96

The submitted storage stability study is acceptable and may be used to satisfy GLN 171-4(e) requirements for reregistration purposes. The data from this study indicate that fortified residues of iprodione, its isomer RP-30228, and metabolite RP-32490 are relatively stable under frozen storage conditions (-10 C, whole commodity kept in Nalgene® polyethylene containers) for at least 12 months in/on representative raw agricultural commodities of the following crop groups: root and tuber vegetables (carrots and ginseng), bulb vegetables (dry onions bulbs and garlic), leafy vegetables (lettuce), Brassica (cole) leafy vegetables (broccoli), fruiting vegetables (peppers and tomatoes), cucurbit vegetables (cucumbers), pome fruits (apples), stone fruits (peaches), small fruits and berries (blueberries, grapes, and strawberries), tree nuts (almond nutmeat and hulls), cereal grains (field corn grain, rice grain, and rice straw), and miscellaneous commodities (canola seed, cottonseed, peanut nutmeat, peanut hulls, peanut hay, peanut vines, and tobacco). In general, there was no significant decline of residues observed over the duration of the study.

Data from the same study indicate that fortified residues of iprodione, its isomer RP-30228, and metabolite RP-32490 are stable under frozen storage conditions for at least 12 months in the processed fractions of canola (presscake, crude oil, and refined oil), grapes (juice, wet pomace, dry pomace, raisins, and raisin waste), peanuts (meal, crude oil, refined oil), potatoes (chips and granules), and rice (polished grain, hulls, and bran).

The raw agricultural and processed commodities represented in the present study more than adequately cover the minimum number of crops and processed fractions for which storage stability studies are required according to the 1993 guidance on the generation of data for this residue chemistry topic/guideline. Adequate frozen storage stability data reflecting storage intervals up to 12 months are now available for representative raw agricultural commodities of oilseeds, non-oily grains, leafy vegetables, root crops, and fruit and fruiting vegetables as well as processed commodities of oilseeds, grains, and fruits.

We recommend that samples from all outstanding and future iprodione field trials and processing studies be analyzed within the interval (12 months) that fortified residues of iprodione, its isomer RP-30228, and metabolite RP-32490 have been found to be stable under frozen storage conditions in/on various commodities.

Several field residue studies that were determined to be candidates for Phase 5 review have yet to be fully evaluated; additional storage stability data may be required if samples were stored for periods substantially longer than 12 months. The available storage stability data tentatively validate the storage conditions and maximum storage intervals (where provided) of samples from studies that were discussed in the Phase 4 Review (C. Olinger, 3/15/91) for the following commodities: almonds, beans (dry and succulent), caneberries, cherries, peaches, peanut hay or hulls, and peanut nutmeat.

With respect to animal commodities, the registrant is reminded that adequate storage stability data are required to support livestock feeding studies. Presently, a poultry feeding study is ongoing (DP Barcode D203214, CBRS No. 13723, S. Knizner, 9/22/94). The Branch noted (DP Barcode D204278, CBRS No. 13863, S. Knizner, 8/1/94) that the adequacy of the existing ruminant feeding study cannot be determined until a Phase 5 review of this study has been completed. The Phase 4 Review noted that iprodione and the non-hydroxylated metabolites appear to be stable for 22 months in milk and 13 months in liver. The hydroxylated metabolite appears to be stable in milk for 13 months.

AGENCY MEMORANDA CITED IN THIS DOCUMENT

CBRS No.:	10807
DP Barcode:	D184060
Subject:	Iprodione Reregistration. Supplemental Kiwifruit Data Submitted to Upgrade Previously Submitted Field Trial Data.
From:	B. Cropp-Kohlligian, CBRS, HED
To:	B. Briscoe, SRRD
Dated:	01/27/94
MRID:	42506601

CBRS No.:	13863
DP Barcode:	D204278
Subject:	PP#4F04316 Iprodione [3-(3,5-dichlorophenyl)-N-(methylethyl)-2,4-dioxo-1-imidazolidinecarboxamide] on Grapes. Petition to Decrease Tolerances for Residues in/on Grapes.
From:	S. Knizner, CBRS, HED
To:	S. Jackson, RD
Dated:	08/01/94
MRID(s):	None

CBRS No.:	13723
DP Barcode:	D203214
Subject:	Iprodione. Draft Protocol for Poultry Feeding Study and Request for Time Extension.
From:	S. Knizner, CBRS, HED
To:	B. Wooge, SRRD
Dated:	09/22/94
MRID(s):	None

MASTER RECORD IDENTIFICATION NUMBERS

The citation for the MRID document cited in this document is presented below.

43273401 Plaisance, R. (1994) Storage Stability of Iprodione (RP-26019), its Isomer (RP-30228), and its Metabolite (RP-32490) in Various Raw Agricultural Commodities and Processing Fractions. Project/Study Number: EC-91-172. Unpublished study prepared by Rhone-Poulenc Ag Company. 604 p.

TABLE 4

1DETAILED ACUTE ANALYSIS INCLUDING AR'S: ALL STATISTICS BASED ON USERS' DAILY CONSUMPTION 11:28 Tuesday, February 27, 1996 28

*NAME: BAYTHROID (CYFLUTHRIN)	STUDY	RDV	NOEL	SF	STUDY TYPE	SPECIES	EFF. LEV.	CORE GRADE	DOC. NO.*
*CASWELL NO: 266E CFR NO: CFR .	A	00000.0250	000050.000	000100	Chron-onco	Rat	Systemic	Minimum	*
*CAS NO: 68359-37-5 SHAUGHNESSY NO: 128831	B		000050.000		Reprodctn	Rat		Minimum	*
*STATUS CODES:	C				Neuro	Hen		Supplmentl	*

*RDV INFO: The LD value used in this analysis is 0.01 MG/KG of BODY WEIGHT/DAY *
FILE INFO: No Tolerance Data Are Used--Without User Modifications. AR DATA: No User Modifications

-FEMALES(13+ YRS)

ESTIMATES BASED ON	ESTIMATED % OF POTENTIAL PERSON DAYS THAT ARE USER-DAYS	MEAN DAILY RESIDUE CONTRIBUTION PER USER-DAY MG/KG BODY WEIGHT/DAY	AS PERCENT OF RDV
TOLERANCES:	0.00	0.000000	0.00
ANTICIPATED RESIDUES:	99.81	0.005645	56.45

0 ESTIMATED % OF POPULATION USER-DAYS WITH RESIDUE CONTRIBUTION EXCEEDING X TIMES THE RDV, FOR X=

	0	.2	.4	.6	.8	1	1.2	1.4	1.6	1.8	2	3	4	5	10	15	20
TOLERANCES:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ANTICIPATED RESIDUES:	100	79	55	36	23	14	9	6	4	2	2	0	0	0	0	0	0

Exposure = RDV x X
= 0.01 x 3.0
High End Exposure = 0.03

MOE = Noel ÷ Exposure
= 20.0 mg/kg/day ÷ 0.03 mg/kg/day
MOE = 666

34