

Shaughnessy No: 058001

Date Out of EFGWB: MAY 3 1990

TO: Dennis Edwards/Jenkins
Product Manager #12/205
Registration Division (H7505C)

FROM: Emil Regelman, Supervisory Chemist
Environmental Chemistry Review Section #2
Environmental Fate and Ground Water Branch, EFED (H7507C)

THRU: Henry M. Jacoby, Chief
Environmental Fate and Ground Water Branch, EFED (H7507C)

Attached, please find the EFGWB review of:

Reg./File #: 3125-123

Common Name: Azinphos-methyl

Chemical Name: O,O-Dimethyl-S-[(4-oxo-1,2,3-benzotriazin-3(4H)-yl)-methyl]phosphorodithioate

Type product: Insecticide/Acaricide/Molluscicide

Product Name: GUTHION

Company Name: Mobay Corporation, Agricultural Chemical Division

Purpose: Review of label amendment to add the use in pomegranates
(California only) [GUTHION 2S]

Date Received: 3/14/90 EFGWB #: 90-0465

Action Code: 330 Total Reviewing Time (decimal days): 0.5

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

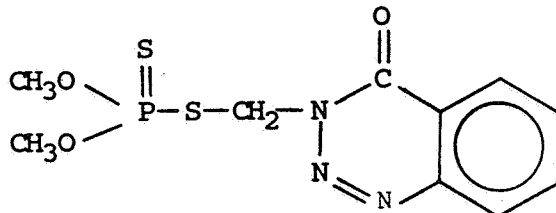
1. CHEMICAL:

Common name: Azinphos methyl

Chemical name: O,O'-Dimethyl-S-[(4-oxo-1,2,3-benzotriazin-3(4H)-yl)-methyl]phosphorodithioate

Product name: GUTHION

Structure:



Formulation: GUTHION 2S Emulsifiable Insecticide

Active ingredient.....22%
Inert ingredients.....78%

Contains 2 lbs of active ingredient per gallon

2. STUDY/ACTION TYPE:


Review proposed label amendment to include uses of GUTHION 2S in pomegranates (California only).

3. STUDY IDENTIFICATION:

Request from Mobay Corporation for a label amendment to include uses in pomegranates (California only). OPP Identifier #132664. March 6, 1990. Copy attached. Copy of the pre-amendment label is also attached.

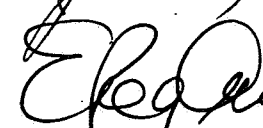
4. REVIEWED BY:

Silvia C. Termes; Chemist
Review Section #2
OPP/EFED/EFGWB

Signature: 
Date: April 20 1990

5. APPROVED BY:

Emil Regelman
Supervisory Chemist
Review section #2
OPP/EFED/EFGWB

Signature: 
Date: MAY 3 1990

6/7. CONCLUSIONS AND RECOMMENDATIONS:

The environmental fate data available support the proposed new use (pomegranates in California) at the maximum single dosage of 4 pints of GUTHION 2S per acre. The data also supports the maximum of two applications per crop season, each at the maximum proposed application rate of 4 pints/A. Therefore, EFGWB does not have any objections to this proposed use provided the product is used according to those instructions given in the label that attempt to minimize environmental hazards.

8. BACKGROUND:

GUTHION 2S is an emulsifiable insecticide containing 2 lb/gal of the active ingredient O,O'-dimethyl-S-[(4-oxo-1,2,3-benzotriazin-3(4H)-yl)-methyl]phosphorodithioate ("Azinphos-methyl").

It is a RESTRICTED USE pesticide (Acute toxicity: cholinesterase inhibitor) that is used to control a wide range of insect pests in a variety of field crops, vegetables, orchards, and ornamentals. It is not to be used in food crops grown in greenhouses. Application rates and mode of application is dependent on the target pest and the type of agricultural commodity.

Mobay has petition an amendment to the current label for GUTHION 2S to include uses in pomegranate orchards (California only).

9. DISCUSSION OF INDIVIDUAL STUDIES: No studies were submitted.

10. COMPLETION OF ONE-LINER: Not applicable.

11. CBI APPENDIX: No CBI.

Azinphos-methyl

Page _____ is not included in this copy.

Pages 4 through 5 are not included.

The material not included contains the following type of information:

- Identity of product inert ingredients.
 - Identity of product impurities.
 - Description of the product manufacturing process.
 - Description of quality control procedures.
 - Identity of the source of product ingredients.
 - Sales or other commercial/financial information.
 - A draft product label.
 - The product confidential statement of formula.
 - Information about a pending registration action.
 - FIFRA registration data.
 - The document is a duplicate of page(s) _____.
 - The document is not responsive to the request.
-

The information not included is generally considered confidential by product registrants. If you have any questions, please contact the individual who prepared the response to your request.

123-6438.YLD

3125-123 -

Base Pre-Reg (6438)

Reason to Issue: To propose use on Christmas Trees.

U.S. LABEL

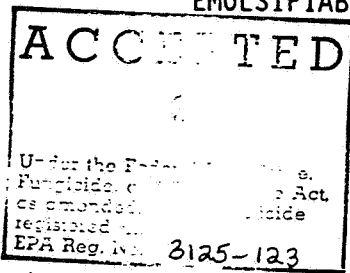
Date of Draft: 6/9/88 (Pre-Reg) (S)

EPA Reg. No. 3125-123

RESTRICTED USE PESTICIDE
Due to Acute Toxicity

For retail sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's certification.

GUTHION® 2S
EMULSIFIABLE INSECTICIDE



ACTIVE INGREDIENT:
O,O-Dimethyl S-[(4-oxo-1,2,3-benzotriazin-3(4H)-yl)methyl] phosphorodithioate 22%

AMENDMENT

To Previously Registered Labeling

Add the Following:

RECOMMENDED APPLICATIONS

CROP	PEST	Pints GUTHION 2S	REMARKS
ORNAMENTALS			
Christmas Trees	Scale spp. Sawfly spp. European pine shoot moth Eastern pine shoot borer Nantucket pine tip moth	1-1/2 to 3	Apply specified dosage per acre by air or ground equipment in sufficient water to give complete coverage but not less than 1 gallon per acre. Time applications to coincide with susceptible pest development.

6

3125-123

123-6464.YLD

Base Pre-Reg. (6464)

U.S. LABEL

Reason to Issue: To clarify for use on Southern Pine Orchards.

Date of Draft: 6/17/88 (Pre-Reg)

EPA Reg. No. 3125-123

RESTRICTED USE PESTICIDE
Due to Acute Toxicity
 For retail sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's certification.

GUTHION[®] 2S

EMULSIFIABLE INSECTICIDE

ACCEPTED

Under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, for the pesticide registered under EPA Reg. No. 3125-123

ACTIVE INGREDIENT:
 O,O-Dimethyl S-[(4-oxo-1,2,3-benzotriazin-3(4H)-yl)methyl] phosphorodithioate 22%

AMENDMENT

To the Previously Registered Labeling

Revise as Follows:

RECOMMENDED APPLICATIONS

CROP	INSECT	Pints GUTHION 2S	REMARKS
ORNAMENTALS			
Southern Pine Orchards	Coneworm Seedworm	See Remarks	Use 6 pints per 100 gallons of water (0.2% dilution) as a full coverage spray*. Use 3 pints per 10 gallons of water (1% dilution) for low volume sprayers. Apply first application within 30 days following conelet closure, followed by 4 to 5 applications (at least 30 days apart). Apply approximately 5 to 10 gallons of the 0.2% dilution with high volume sprayers or approximately 1 to 2 gallons of the 1% dilution with low volume sprayers per tree. Thorough coverage of cones is necessary for maximum control.

*This concentration is calculated for conventional hydraulic-type sprayers. When lower volumes of spray are applied per acre with concentrate sprayers, increase the concentration of GUTHION 2S insecticide in the spray mixture in order to apply amount of GUTHION 2S insecticide per acre equivalent to a full coverage spray. Where conditions dictate an air application, apply dosage per acre equivalent to a full coverage ground spray in not less than one gallon of water per acre.

DIRECTIONS FOR USE

It is a violation of federal law to use this product in a manner inconsistent with its labeling.

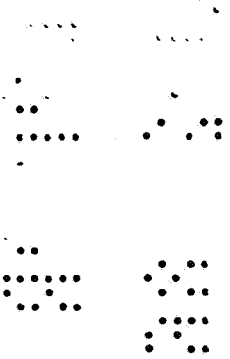
IMPORTANT: Read these entire Directions and Conditions of Sale before using GUTHION 2S emulsifiable insecticide.

CONDITIONS OF SALE: THE DIRECTIONS ON THIS LABEL WERE DETERMINED THROUGH RESEARCH TO BE THE DIRECTIONS FOR CORRECT USE OF THIS PRODUCT. THIS PRODUCT HAS BEEN TESTED FOR A RANGE OF WEATHER CONDITIONS SIMILAR TO THOSE WEATHER CONDITIONS THAT ARE ORDINARY AND CUSTOMARY IN THE GEOGRAPHIC AREA WHERE THE PRODUCT IS USED. INSUFFICIENT CONTROL OF PESTS AND/OR INJURY TO THE CROP TO WHICH THE PRODUCT IS APPLIED MAY RESULT FROM THE OCCURRENCE OF EXTRAORDINARY OR UNUSUAL WEATHER, OR FROM FAILURE TO FOLLOW LABEL DIRECTIONS. IN ADDITION, FAILURE TO FOLLOW LABEL DIRECTIONS MAY CAUSE INJURY TO OTHER CROPS, ANIMALS, MAN, OR THE ENVIRONMENT. MOBAY OFFERS, AND THE BUYER ACCEPTS AND USES, THIS PRODUCT SUBJECT TO THE CONDITIONS THAT EXTRAORDINARY OR UNUSUAL WEATHER, OR FAILURE TO FOLLOW LABEL DIRECTIONS ARE BEYOND THE CONTROL OF MOBAY AND ARE, THEREFORE, THE RESPONSIBILITY OF THE BUYER.

MIXING: GUTHION 2S emulsifiable insecticide forms an emulsion when diluted with water and is suitable for use in all power-operated ground sprayers and aircraft sprayers. To mix with water, pour the required amount of GUTHION 2S into full amount of water and then agitate. If cold water is to be used and nozzle or screen plugging is experienced, 16 mesh slotted screens (from Spraying Systems Co.) are recommended.

DOSAGE: Use specified dosage of GUTHION 2S in the amount of water necessary to give complete coverage of foliage. The type of equipment used will determine the concentration required.

SPRAYING: Work to windward. Protect sprayer operators from drift or mist. When low volumes of spray are applied, complete coverage and thorough application are essential for most effective results. Schedule applications in accordance with local conditions. Consult your State Agricultural Experiment Station or Extension Service for specific use information in your area.



31-25-123

BLD23

Base Reg. (6011)

U.S. LABEL

Reason to Issue: To delete forest and shade tree uses: revise trademark statement.

Date of Draft: 10/16/86 (M)
Supersedes Draft Dated: 12/3/85

EPA Reg. No. 3125-¹²³124-ZC

RESTRICTED USE PESTICIDE
For retail sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's certification.

® GUTHION 2S
EMULSIFIABLE INSECTICIDE

FOR EFFECTIVE ECONOMICAL INSECT CONTROL


Contains 2 lbs. O,O-Dimethyl S-[(4-oxo-1,2,3-benzotriazin-3(4H)-yl)methyl] phosphorodithioate per gallon.

ACTIVE INGREDIENTS:
O,O-Dimethyl S-[(4-oxo-1,2,3-benzotriazin-3(4H)-yl)methyl] phosphorodithioate 22%
Aromatic Petroleum Distillate ... 52%

NET CONTENTS _____ GALLONS

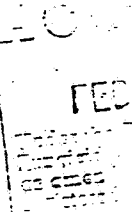
INERT INGREDIENTS: 26%
100%

KEEP OUT OF REACH OF CHILDREN

~~DANGER~~  ~~POISON~~

EPA Reg. No. 3125-123-ZC

(See rear panel for Statements of Practical Treatment and Additional Precautionary Statements)



DO NOT STORE BELOW 25° F. PROTECT FROM HEAT

KEEP AWAY FROM OPEN FLAME

DO NOT HEAT

PELIGRO
PRECAUTION AL USUARIO: Si usted no puede leer o entender inglés, no use este producto hasta que la etiqueta le haya sido explicada ampliamente.
(TO THE USER: If you cannot read or understand English, do not use this product until the label has been fully explained to you.)

STOP - READ THE LABEL BEFORE USE

MOBAY CORPORATION
AGRICULTURAL CHEMICALS DIVISION
Box 4913, Kansas City, Mo. 64120

Note: Underlined letters in chemical nomenclature should be italicized when printed, not underlined.

RECOMMENDED APPLICATIONS (Continued)

CROP	INSECT	Pints GUTHION 2S	REMARKS
<u>FIELD CROPS (Cont.)</u>			
Barley Oats Rye Wheat	Cereal leaf beetle	1-1/2 to 2	Apply specified dosage per acre by air or ground equipment in sufficient water for complete coverage but not less than 1 gallon per acre. Do not apply more than once per season. Do not harvest for food, feed, forage or graze within 30 days of treatment.
Pasture Grasses (States east of Mississippi River)	Grasshoppers Meadow spittlebugs (adults)	2 to 3	Apply specified dosage per acre by air or ground equipment in sufficient water for complete coverage but not less than 1 gallon per acre. Do not apply more than once per cutting. Do not graze or harvest within 16 days of application at the 2 pint rate or 21 days at rates above 2 pints.
Soybeans	Aphids Bean leaf beetle Green cloverworm Leafhoppers Leaf miners Leaf rollers Stink bugs Velvet bean caterpillar	1-1/2 to 2	Apply specified dosage per acre by air or ground equipment in sufficient water to give complete coverage but not less than 1 gallon per acre. Repeat as necessary. Do not apply within 45 days of harvest. Do not graze or feed treated vines to livestock.
	Mexican bean beetle	2 to 3	
Tobacco	Aphids Grasshoppers Tobacco hornworm Tobacco flea beetle	2 to 3	Apply specified dosage per acre by air or ground equipment in sufficient water for complete coverage but not less than 1 gallon per acre. Treat hornworms as soon as egg masses or worms are first found. Repeat as necessary but not within 6 days of harvest. Prime before treating.
	Tobacco budworm	3	
<u>FRUIT</u>			
Apples Oranges Peaches Plums Prunes Quinces Walnuts (Washington, Oregon, Idaho, and Utah)	Apple maggot Codling moth European apple sawfly Eye-spotted bud moth Fruit tree leaf roller Green fruitworm Orange tortrix Plum curculio Red-Banded leaf roller	2 to 4	Apply specified dosage per acre undiluted by helicopter or fixed wing aircraft using equipment capable of applying ultra-low-volume sprays(1). Use Beecomist nozzles with 20 micron sleeves. Do not apply more than 5 times per season nor within 7 days of harvest.

RECOMMENDED APPLICATIONS (Continued)

CROP	INSECT	Pints GUTHION 2S	REMARKS
FIELD CROPS (Cont.)			
Cotton	Boll weevil	1/2 to 1	Apply specified dosage per acre by air or ground equipment in sufficient water for complete coverage but not less than 1 gallon per acre. For early-season control of bollworm and pink bollworm in states west of the Rocky Mts. use 2 to 3 pint and for mid-to-late season application use 3 to 4 pints. Repeat as necessary. Do not apply within 1 day of picking at rates up to 2 pints per acre or within 17 days of picking at rates above 2 pints per acre. Cotton receiving late-season applications should not be pastured.
	Brown cotton leafworm	1	
	Cotton fleahopper		
	Cotton leafworm		
	Lygus bugs	1 to 2	
	Thrips		
Rapid plant bug	2		
Tarnished plant bug			
Stink bug	East of Rocky Mts. 2 West of Rocky Mts. 2 to 4		
Bollworm			
Pink bollworm			
Cotton ⁽¹⁾ (Ultra Low Volume Spray)	Boll weevil	1/2 to 1	GUTHION 2S may be used undiluted in any ground or aerial spray equipment that has been adapted and calibrated for ultra-low volume spraying. Spray machines must be equipped with accepted low volume devices that will produce droplets within the range of 30 to 100 microns in size. ULV aerial applications should be made at altitudes of 10 to 20 feet. Repeat applications as necessary but not within 2 days of hand picking. Cotton may be machine harvested any time after application. Do not graze livestock in treated areas. <u>Early and Mid-season Control:</u> Apply specified dosage per acre in accordance with local recommendations. <u>Diapause Weevil Control:</u> The one pint per acre rate only is recommended for control of diapausing boll weevils. Schedule applications in accordance with local recommendations.

RECOMMENDED APPLICATIONS (Continued)

CROP	INSECT	Pints GUTHION 2S	REMARKS		
<u>FRUIT (Cont.)</u>					
Apricots Nectarines Peaches	Aphids Cottony peach scale European fruit lecanium scale Forbes roller Lesser peach tree borer Mites Peach tree borer	<u>Platynota flavedana</u> leaf roller Plum curculio Red-banded leaf roller San Jose scale [†] Stink bug Tarnished plant bug Terrapin scale Walnut scale White peach scale	Apply specified dosage in 100 gallons of water as a full coverage spray* using not more than 800 gallons of finished spray per acre. Repeat as necessary. Do not apply more than 8 times per season, within 21 days of harvest for apricots, nectarines, and peaches, nor within 15 days of harvest for plums and prunes. Apply the 1-1/2 pint rate for oriental fruit moth or peach twig borer on apricots, nectarines and peaches only before mid-season. For control of peach tree borer, apply 2 or 3 sprays to trunk from ground to scaffold limbs, timed with moth flight. For scale control, apply when crawlers are present. NOTE: It is suggested that when treating nectarines during bloom period, beekeepers should be warned well in advance to remove hives a safe distance from orchards to be treated.		
		1 to 1-1/4			
		1 to 1-1/2			
		1 to 1-1/4			
	Nectarines	Thrips		1 to 1-1/4	
	Plums Prunes	Aphids Eye-spotted bud moth Forbes scale Fruit tree leaf roller Lesser peach tree borer Mites Orange tortrix Peach tree borer American plum borer		Peach twig borer Plum curculio Red-banded leaf roller San Jose scale [†] Stink bug Tarnished plant bug Tussock moth	*GUTHION used alone may not provide satisfactory control. Consult your local agricultural advisor or extension service for recommendations.
				1 to 2	
				2	

RECOMMENDED APPLICATIONS (Continued)

CROP	INSECT	Pints GUTHION 2S	REMARKS
FRUIT (Cont.)			
Blackberries	Leafhoppers	1	Apply specified dosage per acre to foliage using approximately 200 gallons of water for good coverage. Where ground conditions dictate an air application, use specified rate in a minimum of 1 gallon of water per acre. Repeat as necessary but not within 14 days of harvest.
Boysenberries	Leaf rollers		
Loganberries	Leaf miners	1-1/4	
Raspberries	Aphids	1-1/4 to 2	
	Obscure root weevil	2	
	Raspberry crown (root) borer	4 to 8	For control of root weevils and borers prior to harvest apply specified dosage per acre to lower portion of canes and to the soil beneath the plants, using approximately 200 gallons of water. Do not apply more than twice per season. Do not make applications within 3 days of harvest at rates up to 4 pints per acre. Rates above 4 pints per acre should be applied only before fruit set or after crop is harvested.
	Obscure root weevil	2	
Blueberries (Eastern & North Central States Only)	Blueberry maggot Fruitworms Lecanium Scale Plum curculio	2 to 3	Apply specified dosage per acre using approximately 200 gallons of water for good coverage. Where ground conditions dictate an air application, use specified rate in a minimum of 1 gallon of water per acre. Repeat as necessary but not more than 4 times per season nor within 3 days of harvest. If multiple late season applications of dust formulations containing GUTHION are to be made for blueberry maggot control, then do not make more than two applications of GUTHION 2S per season with the last spray no later than June 15.
Cranberries	Cranberry fruitworm <u>Sparganothis sulfureana</u> Tipworm	2 to 4	Apply specified dosage per acre using approximately 200 gallons of water for good coverage. Where ground conditions dictate an air application, use specified rate in a minimum of 1 gallon of water per acre. Repeat as necessary. Do not apply within 21 days of harvest.
	Fireworms	4	

RECOMMENDED APPLICATIONS (Continued)

CROP	INSECT	Pints GUTHION 2S	REMARKS
FRUIT (Cont.)			
Citrus Fruits	Aphids Black scale Brown soft scale Chaff scale Citricola scale Citrus mealybug Citrus rust mite Citrus thrips Cottony-cushion scale European brown snail Florida red scale Fruit tree leaf rollers Fuller rose beetle Glover scale Orange tortrix Purple scale Snow scale Western tussock moth Whiteflies	1 to 1-1/2	Apply specified dosage in 100 gallons of water as a full coverage spray* using not more than 2000 gallons of finished spray per acre. A single application per year may be applied up to within 7 days of picking. Where 2 applications are required, the second spray should not be applied within 28 days of harvest. Do not apply more than twice per fruit year. Do not pick fruit or do other work involving contact with the tree, such as pruning, within 7 days of treatment.
	California red scale Texas citrus mite Yellow scale	1-1/2	
Grapes	Grape berry moth Grape cane girdlers Grape mealybug Leafhoppers Mites Red-banded leaf roller Thrips	1 to 2	Apply specified dosage in 100 gallons of water as a full coverage spray* using not more than 300 gallons of finished spray per acre. Repeat as necessary but not more than 3 times per season. Minimum dosage specified may be applied up to harvest. Higher rates up to 1-1/2 pints require a 10-day interval to harvest and above 1-1/2 pints a 28-day interval to harvest.
Straw- berries	Aphids Meadow spittlebug Oblique-banded leaf roller Omnivorous leaf tier Obscure root weevil Pea leaf weevil Small black (grass) weevil Strawberry leaf rollers Whitefly	2	Apply specified dosage in 200 gallons of water per acre as a full coverage spray*. Where ground conditions dictate an air application, use specified rate in a minimum of 1 gallon of water per acre. Repeat as necessary. Do not apply within 5 days of harvest.

RECOMMENDED APPLICATIONS (Continued)

CROP	INSECT	Pints GUTHION 2S	REMARKS
<u>NUTS</u> Almonds	Peach twig borer	1-1/2 to 2	Apply specified dosage in 100 gallons of water as a full coverage spray* using not more than 500 gallons of finished spray per acre. Do not apply more than twice per season nor within 60 days of harvest. Allow 30 days between applications.
Filberts (Pacific Northwest Only)	Apple mealybug Filbert aphid Filbert leaf roller Filbertworm	1 to 3	Apply specified dosage in 100 gallons of water as a full coverage spray* using not more than 1000 gallons of finished spray per acre. Repeat as necessary. Do not apply within 30 days of harvest. Do not graze livestock in treated groves for 21 days after treatment.
Pecans	Aphids Fall webworm Hickory shuckworm Leaf miners May beetles Mites Pecan casebearer Southern green stink bug Spittlebug Twig girdlers Walnut caterpillar	1-1/2 to 2-1/4	Apply specified dosage in 100 gallons of water as a full coverage spray* using not more than 1800 gallons of finished spray per acre. Repeat as necessary. Do not apply after husks split. Where more than 22-1/2 pints of GUTHION 2S are applied per acre in a single application do not graze livestock in treated groves. Where 22-1/2 pints or less of GUTHION 2S are applied per acre livestock may be grazed in treated groves after a 21-day post-treatment interval.
Walnuts	Codling moth Filbertworm	1-1/2 to 3-3/4	Apply specified dosage in 100 gallons of water as a full coverage spray* using not more than 1100 gallons of finished spray per acre. Repeat as necessary. Do not apply after husks split. Do not graze livestock in treated groves for 21 days after treatment.

GUTHION 2S

RECOMMENDED APPLICATIONS (Continued)

CROP	INSECT	Pints GUTHION 2S	REMARKS
<u>VEGETABLES</u>			
Artichokes	Plum moth	6	Apply specified dosage per acre by air or ground equipment in sufficient water for complete coverage but not less than 1 gallon per acre. Repeat as necessary. Do not apply within 30 days of harvest. Do not feed or ensile treated forage.
Beans (Snap & Dried)	Leaf rollers Mites	1 to 2	Apply specified dosage per acre by air or ground equipment in sufficient water for complete coverage but not less than 1 gallon per acre. Repeat as necessary. Do not apply to snap beans within 7 days of harvest nor to dry beans within 30 days of harvest. Do not exceed 4 applications on dry beans. Do not feed or ensile treated forage.
	Aphids Bean leaf beetle Green cloverworm Leafhoppers Leaf miners Stink Bugs Velvet bean caterpillar	1-1/2 to 2	
	Mexican bean beetle Spotted cucumber beetle Striped cucumber beetle Tarnished plant bug Western-striped cucumber beetle	2	
Broccoli Brussels Sprouts Cabbage (Includes tight heading varieties of Chinese cabbage) Cauliflower	Aphids Cabbage looper Diamondback moth Imported cabbage-worm	2 to 3	Apply specified dosage per acre by air or ground equipment in sufficient water for complete coverage but not less than 1 gallon per acre. Repeat as necessary. Do not apply within 7 days of harvest for Brussels sprouts, 15 days of harvest for broccoli and cauliflower, nor within 21 days of harvest for cabbage.
	Cabbage maggot	1/2	Mix specified dosage in 50 gallons of water. Apply 4 to 6 ounces of this emulsion per plant immediately after transplanting.
	Cabbage maggot (Transplant Fields in California only)	3	Apply specified dosage in 300 to 400 gallons of water per acre as a soil drench in the rows when damage first appears. Additional applications may be necessary. Do not apply within 21 days of harvest.
	Cabbage maggot (Direct Seeded Fields in California only)	3	Apply specified dosage per acre in sufficient water for uniform distribution. Mix in the upper 2 inches of soil prior to seeding or spray in the seed row at planting time. Usually 2 to 3 additional sprays are necessary during the growing season depending upon time of year and maggot population. Do not apply within 21 days of harvest.

RECOMMENDED APPLICATIONS (Continued)

CROP	INSECT	Pints GUTHION 2S	REMARKS
VEGETABLES (Cont.)			
Celery	Aphids	2	Apply specified dosage in 100 gallons of water as a full coverage spray* using not more than 200 gallons of finished spray per acre. Repeat as necessary but not within 14 days of harvest.
	Leaf miners		
	Leafhoppers		
	Spittlebugs		
Blackeyed peas (Southern peas, Crowder peas)	Corn earworm Cowpea curculio	3 to 4	Apply specified dosage per acre by air or ground equipment in sufficient water for complete coverage but not less than 1 gallon per acre. Do not apply more than 4 times per season nor within 7 days of harvest. Do not use vines for feed or forage nor pasture treated areas.
	Leaf miners Stink bugs	1-1/2 to 2	
Cucumbers	Spotted cucumber beetle	2	Apply specified dosage per acre by air or ground equipment in sufficient water for complete coverage but not less than 1 gallon per acre. Do not apply more than 3 times per season nor within 1 day of harvest.
	Striped cucumber beetle		
	Western-striped cucumber beetle		
Eggplant	Leaf miners	1-1/2 to 2	Apply specified dosage per acre by air or ground equipment in sufficient water to give complete coverage but not less than 1 gallon per acre. Repeat as necessary. Do not apply after fruit set.
	European corn borer	2	
	Flea beetles		
Onions (Green & Dry)	Thrips	2 to 3	Apply specified dosage per acre by air or ground equipment in sufficient water to give complete coverage but not less than 1 gallon per acre. Do not apply more than 3 times per season nor within 28 days of harvest of dry onions or 7 days of harvest of green onions.
Peppers	Leaf miners	1-1/2 to 2	Apply specified dosage per acre by air or ground equipment in sufficient water to give complete coverage but not less than 1 gallon per acre. A maximum of 4 treatments may be made up to within 3 days of harvest. Where more than 4 applications are required, do not apply last spray within 14 days of harvest.
	European corn borer Flea beetles	2	
Potatoes	Colorado potato beetle	1-1/2	Apply specified dosage per acre by air or ground equipment in sufficient water for complete coverage but not less than 1 gallon per acre. Repeat as necessary. Do not apply within 7 days of harvest.
	Banded cucumber beetle	1-1/2 to 2	
	Leaf miners		
	European corn borer Flea beetle Leafhoppers Spittlebugs Tarnished plant bug	2 to 3	
	Tuberworm		

RECOMMENDED APPLICATIONS (Continued)

CROP	INSECT	Pints GUTHION 2S	REMARKS
<u>VEGETABLES (Cont.)</u>			
Spinach	Aphids Leaf miners Mites	1-1/2 to 2	Apply specified dosage per acre by air or ground equipment in sufficient water for complete coverage but not less than 1 gallon per acre. Repeat as necessary. Do not apply within 14 days of harvest.
Tomatoes	Colorado potato beetle	1-1/2	Apply specified dosage per acre by air or ground equipment in sufficient water for complete coverage but not less than 1 gallon per acre. Repeat as necessary. The high rates should be used where heavy infestations of late instar lepidopterous larvae (large worms) and pinworms are present. Rates of 3 pints or less per acre may be applied up to day of harvest. Rates above 3 pints per acre require an interval of 14 days between application and harvest.
	Banded cucumber beetle Drosophila Green stink bug Leaf miners Whitefly	1-1/2 to 2	
	Aphids European corn borer Flea beetles Grasshoppers Leafhoppers Thrips	2 to 3	
	Tuberworm	2-1/4 to 3	
	Corn earworm Fruitworm Hornworm Pinworm Yellow-striped armyworm	3 to 6	
<u>MELONS</u>			
Honeydew Melons Muskmelons (Cantaloupe) Watermelons Other melons	Leafhoppers Leaf miners	1-1/2 to 2	Apply specified dosage per acre by air or ground equipment in sufficient water to give complete coverage but not less than 1 gallon per acre. Repeat as necessary up to the day of harvest but not more than 4 times per season.
	Rindworms Spotted cucumber beetle	2	
	Striped cucumber beetle		
	Western-striped cucumber beetle		
<u>ORNAMENTALS</u>			
Ornamentals Nursery Plants	Aphids Black vine weevil Cerococcus scale Euonymus scale Juniper scale Lace bugs Leafhoppers Mites Olive scale Oystershell scale Pulvinaria scale Thrips	1-1/2 to 2	Apply specified dosage per 100 gallons of water (2 teaspoonfuls per gallon). Spray all foliage surfaces including the underside of leaves for complete coverage. For control of black pine leaf, brown soft, European elm, and Putnam scales, use 1 tablespoonful per gallon. Repeat as necessary.
	Brown soft scale Putnam scale	4	
	European elm scale Black pine leaf scale	3 to 4	

RECOMMENDED APPLICATIONS (Continued)

CROP	INSECT	Pints GUTHION 2S	REMARKS
ORNAMENTALS (Cont.)			
Ornamentals, Nursery Plants (Cont.)	Cone midge Cone moth	8 to 16	Apply specified dosage per 100 gallons of water. Time applications to coincide with moth flight when cones are open for pollination. Thorough coverage of cones is necessary for maximum control. Repeat as necessary.
	European pine shoot moth Nantucket pine tip moth	1-1/2 to 3	Apply specified dosage per acre in sufficient water for good coverage. Time applications to coincide with moth flights. For application to individual trees, use 1 tablespoonful of GUTHION 2S per gallon of water.
Injury to hawthorn or American linden may occur under some conditions. Do not allow children or pets on treated area until material has been washed into soil and treated area is dry.			
Southern Pine Seed Orchards	Coneworm Seedworm	See Remarks	Use a maximum of 6 pints per 100 gallons of water (0.2% dilution) as a high volume spray*. Use a maximum of 3 pints per 10 gallons of water (1% dilution) for low volume applications. Apply 5 to 10 gallons of the 0.2% dilution or 1 to 2 gallons of the 1% dilution per tree. Make the first application within 30 days of conelet closure. Apply either dilution as needed with no more than 6 applications per season. Applications may be made more frequently at lower concentrations but do not exceed the quantity allowed at the highest dilution. Thorough coverage is necessary for maximum control.

*This concentration is calculated for conventional hydraulic-type sprayers. When lower volumes of spray are applied per acre with concentrate sprayers, increase the concentration of GUTHION 2S in the spray mixture in order to apply amount of GUTHION 2S per acre equivalent to a full coverage spray. Where conditions dictate an air application, apply dosage per acre equivalent to a full coverage ground spray in not less than one gallon of water per acre.

(1)NOTE: This formulation, when used undiluted, may cause spotting of automobile finishes if prolonged exposure is permitted. Do not spray directly over automobiles. If accidental exposure does occur, automobiles should be washed

immediately.

RESTRICTIONS

Do not use on other crops used for food or forage. Use only according to label directions. Application at rates above those shown may result in illegal crop residues. Do not graze livestock in treated orchards or groves for 21 days after treatment. Do not treat food crops grown in the greenhouse. Do not apply when weather conditions favor drift from areas treated.

RE-ENTRY STATEMENTS FOR FARMWORKERS

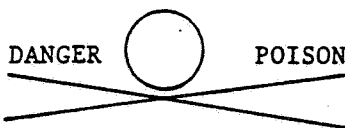
Do not apply this product in such a manner as to directly or through drift expose workers or other persons. The area being treated must be vacated by unprotected persons. Do not enter treated areas without protective clothing until 24 hours after application. Because certain states may require more restrictive reentry intervals for various crops treated with this product, consult your State Department of Agriculture for further information.

(The following may appear on supplemental labeling accompanying the product) Written or oral warnings must be given to workers who are expected to be in a treated area or in an area about to be treated with this product. Oral warnings should include those statements found under the label heading "Precautionary Statements" and "Re-entry Statements" included on this label. When oral warnings are given, warnings shall be given in a language customarily understood by workers. Oral warnings must be given if there is reason to believe that written warnings cannot be understood by workers. Written warnings must include the following information: DANGER, area treated with GUTHION 2S on (date of application). Do not enter without appropriate protective clothing until 24 hours after application. If on skin, remove contaminated clothing and wash skin immediately with soap and warm water. If eyes are contaminated, wash with flowing water for at least 15 minutes. If swallowed, vomiting should be induced. (See Precautionary Statements on label).

ROTATIONAL CROPS

Treated areas may be replanted with any crop specified on this label as soon as practical after last application. Root crops may be planted 180 days after last application. All other crops must not be planted within 30 days of last application.

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS



Poisonous if swallowed, inhaled, or absorbed through the skin. Do not get in eyes or on skin. Do not breathe fumes or spray mist. Spray operator should work to windward to stay out of drift or mist.

When loading spray tank or handling the concentrate at any other time, wear protective clothing, natural rubber gloves, and goggles. Wear a pesticide respirator jointly approved by the Mining Enforcement and Safety Administration (formerly the U.S. Bureau of Mines) and by the National Institute for Occupational Safety and Health under the provisions of 30 CFR Part 11.

Do not contaminate feed or foodstuffs. Keep out of reach of children and domestic animals. Keep all unprotected persons out of the operating area or vicinity where there may be danger of drift. Wash hands, arms, and face thoroughly with soap and warm water before eating or smoking.

HANDLING OF CONTAMINATED ARTICLES: Clothing and rags receiving undiluted GUTHION 2S as a result of leaks, spills, or mishaps should be removed immediately and not reused. These contaminated articles should be buried in the same manner as the empty container; see container disposal section for directions. (Contaminated articles which should be discarded would include: hats, gloves, aprons, coats, boots, etc. not made of rubber or coated with rubber or other similar materials). Clothing receiving spray mist or droplets from the mixed, diluted GUTHION 2S should be removed and decontaminated before reuse. This clothing can be decontaminated by machine washing separately from other items with soap or detergent and bleach in hot water twice before reuse. Protective clothing and equipment should be washed down with detergent or soap and bleach in water. Wash water from the cleaning of protective clothing or equipment should not be allowed to run off or otherwise enter water supplies.

SYMPTOMS OF POISONING: A sense of "tightness" in the chest. Sweating. Contracted pupils. Stomach pains. Vomiting and diarrhea.

STATEMENTS OF PRACTICAL TREATMENT

In case of poisoning call a physician immediately. Have patient lie down and keep quiet. If swallowed, vomiting should be induced. Administer water freely and induce vomiting by giving one dose (1/2 oz. or 15 ml.) of syrup of ipecac. If vomiting does not occur within 10 to 20 minutes, administer second dose. If syrup of ipecac is not available, induce vomiting by sticking finger down throat. Repeat until vomit fluid is clear. Never give anything by mouth to an unconscious person. Professional medical assistance should be secured immediately. If on skin, remove contaminated clothing and wash skin immediately with soap and warm water. If eyes are contaminated, wash with flowing water for at least 15 minutes.

TO PHYSICIAN:

ANTIDOTE - Administer atropine sulfate in large therapeutic doses. Repeat as necessary to the point of tolerance. 2-PAM is also antidotal and may be administered in conjunction with atropine.

Compound inhibits cholinesterase resulting in stimulation of the central nervous system, the parasympathetic nervous system, and the somatic motor nerves. Do not give morphine. Watch for pulmonary edema, which may develop in serious cases of poisoning even after 12 hours. At first sign of pulmonary edema, the patient should be placed in an oxygen tent and treated symptomatically.

ENVIRONMENTAL HAZARDS

This product is toxic to fish, birds and other wildlife. Keep out of any body of water. Do not apply where runoff is likely to occur. Do not apply when weather conditions favor drift from areas treated. Do not contaminate water by cleaning of equipment, or disposal of wastes.

Apply this product only as specified on this label.

PHYSICAL AND CHEMICAL HAZARDS

Keep away from open flame. Do not heat.

STORAGE AND DISPOSAL

Pesticide Disposal: Do not contaminate water, food or feed by storage or disposal.

Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Disposal: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedure approved by state and local authorities.

Store in a cool, dry place and in such a manner as to prevent cross contamination with other pesticides, fertilizers, food, and feed. Do not store below 25°F. Keep away from open flame and extreme heat. Store in original container and out of the reach of children, preferably in a locked storage area.

Handle and open container in a manner as to prevent spillage. If container is leaking invert to prevent leakage. If the container is leaking or material spilled for any reason or cause, carefully dam up spilled material to prevent runoff. Refer to Precautionary Statements on label for hazards associated with the handling of this material. Do not walk through spilled material. Absorb spilled material with absorbing type compounds and dispose of as directed for pesticides above. In spill or leak incidents, keep unauthorized people away. You may contact the Mobay Emergency Response Team for decontamination procedures or any other assistance that may be necessary. The Mobay Kansas City Emergency Response Telephone No. is 816-242-2582, or contact Chemtrec at 800-424-9300.

GUTHION is a Reg. TM of Bayer AG, Leverkusen.