



PAUL R. LEPAGE
GOVERNOR

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY
BOARD OF PESTICIDES CONTROL
28 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0028

WALTER E. WHITCOMB
COMMISSIONER
HENRY JENNINGS
DIRECTOR

To: Board of Pesticides Control Members
From: Mary Tomlinson, Pesticides Registrar/Water Quality Specialist
RE: EPA Special Local Need (SLN) [FIFRA, Section 24(c)] application to approve the use of Gowan Malathion 8 Flowable, EPA Reg. No. 10163-21, on lowbush and highbush blueberries to control spotted wing drosophila
Date: March 29, 2013

Enclosed is the above referenced Special Local Need (SLN) [FIFRA, Section 24(c)] application and supporting documents for your consideration.

In 2012, the Board of Pesticides Control approved a Section 18 Specific Emergency Exemption for use of Gowan Malathion 8 Flowable to control spotted wing drosophila (SWD) in blueberries. Due to the serious threat created by increasing populations of this pest in blueberry and caneberry growing areas across the country, the EPA has encouraged states to submit Section 24(c) registrations in lieu of Section 18 declarations.

Malathion has demonstrated control against SWD at the higher rate of 2-2.5 lb. ai per acre. (This is the same rate approved for the 2012 Section 18 with a maximum of 5 lbs ai per acre per season.) The current lower labeled rates are not as effective in controlling SWD. Due to its short reentry and post harvest intervals, Malathion is a pesticide of choice for late season application and compressed harvesting periods. Use of this product in rotation with other pesticides with different modes of action will aid in resistance prevention.

Please review the following documents and let me know if you have any questions.

- FIFRA, Section 24(c) application
- Two letters of support from Dave Yarborough, Wild Blueberry Specialist, Maine Cooperative Extension
- Letter of support from Shauna Weaver, Registration Specialist, Gowan Company
- Letter of support from Dave Bell, Executive Director, Wild Blueberry Commission of Maine
- Gowan Malathion 8 Flowable draft Maine SLN label
- Gowan Malathion 8 Flowable Section 3 label
- Gowan Malathion 8 Flowable MSDS

Please review these materials and let me know if you have any questions.

United States Environmental Protection Agency
Office of Pesticide Programs, Registration Division (7505C)
Washington, DC 20460



**Application for/Notification of State Registration
of a Pesticide To Meet a Special Local Need**
*(Pursuant to section 24(c) of the Federal Insecticide,
Fungicide, and Rodenticide Act, as Amended)*

For State Use Only
Registration No. Assigned
ME-XXXXXX
Date Registration Issued

1. Name and Address of Applicant for Registration
Gowan Company
P.O. Box 5569
Yuma, AZ 85366-5569

2. Product is (Check one)
 EPA-Registered
EPA Registration Number
10163-21
 New (not EPA-registered)
Attach EPA Form 8570-4, Confidential Statement of Formula for new products.
EPA Company Number

3. Active Ingredient(s) in Product
malathion

4. Product Name
Gowan Malathion 8 Flowable

5. If this is a food/feed use, a tolerance or other residue clearance is required. Cite appropriate regulations in 40 CFR Part 180, 185, and/or 186. 180.111

6. Type of Registration (Give details in Item 13 or on a separate page, properly identified and attached to this form):
 a. To permit use of a new product.
 b. To amend EPA registrations for one or more of the following purposes:
 (1) To permit use on additional crops or animals.
 (2) To permit use at additional sites.
 (3) To permit use against additional pests.
 (4) To permit use of additional application techniques or equipment.
 (5) To permit use at different application rates.
 (6) Other (specify below)

7. Nature of Special Local Need (check one)
 There is no pesticide product registered by EPA for such use.
 There is no EPA-registered pesticide product which, under the conditions of use within the State, would be as safe and/or as efficacious for such use within the terms and conditions of EPA registration.
 An appropriate EPA-registered pesticide product is not available.

10. Has FIFRA section 24(c) registration for this use of the product ever, by another State, been (check appropriate box(es), if known):
 Sought Issued Denied Revoked
If any of the above are checked, list States in Item 13 below.
 No FIFRA section 24(c) Action

8. If this registration is an amendment to an EPA-registered product, is it for a "new use" as defined in 40 CFR 152.3?
 Yes (discuss in Item 13 below) No

9. Has an EPA Registration or Experimental Use Permit for this chemical ever been (check applicable box(es), if known):
 Sought Issued Denied Cancelled Suspended
 Registration Experimental Use Permit No Previous Permit Action

11. Endangered Species Act: (Give details in Item 13 or on a separate page, properly identified and attached to this form)
Identify the counties where this pesticide will be used. If Statewide, indicate "all." Provide a list of Federally protected endangered/threatened species which occur in the areas of proposed use.

Certification
I certify that the statements I have made on this form and all attachments thereto are true, accurate, and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.

12. Indicate use status of Special Local Need, i.e., planned dates of use:
From: N/A To: N/A

Signature of Applicant or Authorized Representative
Shana L. Weaver
Title
Registration Specialist
Telephone Number
928-819-1542
Date
2/25/13

13. Comments (attach additional sheet, if needed)

Determination by State Agency
This registration is for a Special Local Need and is being issued in accordance with section 24(c) of FIFRA, as amended. To the best of our knowledge, the information above is correct, except as noted in "Comments" below or in attachments.

Name, Title, and Address of State Agency Official
Mary Tomlinson
Maine Board of Pesticides Control
28 State House Station
Augusta, ME 04333
Title
Pesticides Registrar/Water Quality Specialist
Telephone Number (207) 287-2731
Date April 12, 2013

Comments (by State Agency Only)

Received by EPA



Wild Blueberry Office Deering Hall University of Maine, Orono 04469

March 4, 2013

Mary E. Tomlinson
Pesticide Registrar/Water Quality Specialist
Maine Board of Pesticides Control
28 State House Station
Augusta, ME 04333

Dear Mary:

In 2012 the State of Maine applied to the EPA for an application emergency Section 18 for the use of a higher rate of Malathion 8F for control of the spotted wing drosophila and Gowan Co provided the label. This year the consensus is that a 24(c) label with the higher use rates is the approach that we should take to obtain a label for control of the spotted wing drosophila (SWD). This pest is increasing and will continue to be a serious threat, so this label is needed to insure its control. The current label rates are not highly effective in controlling this pest. Because of ability of the SWD to rapidly increase and its highly destructive nature, this higher rate is needed to control SWD. It is essential that we also have pesticides available with different modes of action to rotate in order to prevent pesticide resistance from occurring.

I request that the Board of Pesticides control approve a State of Maine 24(c) label for control of the spotted wing drosophila in blueberries and cane fruit in Maine for 2013. I have provided a request to Gowan Company on behalf of the wild blueberry growers in Maine and Dr. David Handley will provide a letter of support for its need in cultivated blueberries and cane fruit in Maine.

Sincerely,

David Yarborough PhD
Wild Blueberry Specialist
Professor of Horticulture
the University of Maine
5722 Deering Hall Rm. 414
Orono, ME 04469-5722

Phone: [207-581-2923](tel:207-581-2923)
TollFree: [800-897-0757 x 1](tel:800-897-0757)
Fax: [207-581-2941](tel:207-581-2941)
EMail Davidy@Maine.edu
www.wildblueberries.maine.edu

One of Maine's public universities

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Wild Blueberry Office Deering Hall University of Maine, Orono 04469

January 31, 2013

Shauna Weaver
Gowan Company
P.O. Box 5569
Yuma, AZ 85366-5569

Dear Shauna:

In 2012 the State of Maine applied to the EPA for an application emergency Section 18 for the use of a higher rate of Malathion 8F for control of the spotted wing drosophila and Gowan Co provided the label. This year the consensus is that a 24(c) label with the higher use rates is the approach that we should take to obtain a label for control of the spotted wing drosophila. This pest is increasing and will continue to be a serious threat, so this label is needed to insure its control.

I request that Gowan Co. apply to the Board of Pesticides control for a State of Maine 24(c) label for control of the spotted wing drosophila in blueberries and cane fruit in Maine for 2013. I will provide a letter of support to the Pesticides Control Board on behalf of the wild blueberry growers in Maine and Dr. David Handley will provide a letter of support for its need in cultivated blueberries and cane fruit in Maine.

Sincerely,

David Yarborough PhD
Wild Blueberry Specialist
Professor of Horticulture
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TollFree: [800-897-0757](tel:800-897-0757) x 1
Fax: [207-581-2941](tel:207-581-2941)
EMail Davidy@Maine.edu
www.wildblueberries.maine.edu

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The Go To Company

P.O. Box 5569 ▲ Yuma, AZ 85366-5569 ▲ Phone (928) 783-8844 ▲ FAX (928) 343-9255

February 22, 2013

Maine Department of Agriculture, Conservation, and Forestry
Maine Board of Pesticide Control
28 State House Station
Augusta, ME 04333-0028

Attention: Mary Tomlinson

RE: Gowan Malathion 8F Agricultural Insecticide, EPA Reg. No. 10163-21
SLN (24c) Application, Increased Rate on Blueberries

Dear Ms. Tomlinson:

I would like to give you some background to the request for an SLN (24c) in Maine for control of Spotted Wing Drosophilla on Blueberries. During the reregistration of Malathion, we agreed to change the rate in blueberries from a range of 1.5 – 2.5 pints product per acre per application to 1.25 pints product per acre and a maximum of 3 applications per year. The proposed SLN (24c) would slightly raise the single application rate to up to 2.5 pints per acre and reduce the total number of applications to 2 per year.

In 2012 many states requested Section 18 labels for Malathion to control SWD in blueberries. These Section 18 labels allowed growers in some eastern US states to use the 2.5 pints per acre rate that provided more effective SWD control and longer residual. Based on the major economic impact of SWD in berry crops during 2012, there is a continued need for growers of blueberry, raspberry, and blackberry to have a full suite of insecticide options available to them for 2013.

To prepare for this issue and avoid last-minute requests to EPA from many separate states, conference calls were held on 12/19/12 organized by David Epstein, USDA and 1/29/13 with Tawanda Maignan, Emergency Response Team Leader at EPA's Office of Pesticide Programs. The calls were held to try and have a more coordinated effort for 2013. The call determined that the best course of action for now would be to allow SLN (24c) labels on blueberries in the applicable states. Cane Berries and Strawberries will be addressed in a future conference call.

EPA has expressed support for the following, blueberries: 2.5 lb. ai/A, 2 application per year, 1 day PHI. In addition EPA has not required residue data. The enclosed memo from Exponent provided by Cheminova is a synopsis of the study by Bookbinder, 1994 which is considered by EPA to be sufficient to satisfy the US data requirements for the use of malathion on blueberries. The tolerance approved by EPA for malathion on blueberry is 8 ppm (40 CFR 180.111).

The University of Maine has asked Gowan Company to support this registration because efficacy trials have shown that the current labeled rate of 1.25 pts. per acre will not sufficiently or effectively control Spotted Wing Drosophilla which is a devastating pest for blueberry growers.

Gowan Company would like to apply for this Special Local Need Registration of Gowan Malathion 8F Agricultural Insecticide for use in Maine on Blueberries.

In support of this application, we have enclosed the following:

- Cover Letter
- Application for/Notification of State Registration of a Pesticide To Meet a Special Local Need (EPA Form 8570-25)
- Proposed Malathion 8 Flowable 24(c) label
- Current Malathion 8 10163-21, EPA Stamped Label
- Current Malathion 8 Flowable, Section 3 label
- Exponent memo on Residues for New Blueberry Use Pattern
- Residues of malathion on lowbush blueberry – Experiment 34
- Letter from Michigan State University with attached Appendix A
- Letter of Support from David Yarborough, Ph.D., University of Maine

If I can provide further information or documentation, please contact me at (928) 819-1542 or sweaver@gowanco.com.

Kind regards,

Shauna Weaver
Registration Specialist

Enclosures



Wild Blueberry Commission OF MAINE

5784 York Complex, Suite 52, Orono, Maine 04469-5784

TEL: 207-581-1475

FAX: 207-581-3499

March 13, 2013

Dr. John Jemison Jr., Chair
Maine Board of Pesticides Control
28 State House Station
Augusta, ME 04333

Dear Dr. Jemison and Board Members:

I am writing in support of a 24-C label for the State of Maine for the option of growers to use Gowan's malathion 8F to control spotted winged drosophila (SWD) at the higher effective control rate. Annually about 30,000 acres of lowbush blueberries are harvested yielding approximately 85 million pounds. Over the last 4 years we have tracked the spread of SWD from the west coast. SWB was first detected in Maine in October of 2011; unfortunately, by mid-August 2012 it was apparent that SWD had expanded its range along the Maine coast with traps indicating that exponential population increases had occurred. Without effective control options, this pest could easily cause tens of millions dollars in economic loss to Maine's economy.

Currently, University of Maine entomologists do not know what population levels are expected to overwinter in Maine and what SWD pressure will be in 2013. Entomologists have said we may not know what the equilibrium infestation level will be for 8-10 years. The relatively short SWD life cycle, yielding multiple generations in a Maine growing season which attacks whole fruit, makes this pest a challenge to manage. However, experience around the country has shown growers who are vigilant in their monitoring and control efforts can insure high quality berry fruit.

Growers need to have multiple effective control options to manage SWD. If populations build early in the season, control materials will need to be rotated. Not all countries around the world have the same tolerances for pest control materials also necessitating multiple control options for growers selected based on market. Since pest pressure could be significant during the harvest period, growers also need control options such as malathion that are both efficacious and have workable pre-harvest intervals.

We have initiated an Integrated Pest Management (IPM) research and extension project for SWD in partnership with the University of Maine, Department of Agriculture,

over→

Conservation and Forestry, Maine Organic Farmers and Gardiners Association, and the Maine Vegetable and Small Fruit Growers Association. While this project moves forward to develop SWD IPM practices in Maine, growers need effective control options. The Commission requests the Board's approval of this malathion 24-C request in Maine for the 2013 growing season.

Sincerely,



David K. Bell
Executive Director

CC: Mary E. Tomlinson, Pesticide Registrar/Water Quality Specialist
Henry Jennings, Director
Wild Blueberry Commission
Wild Blueberry Advisory Committee



The Go To Company

P.O. Box 5569 • Yuma, AZ 85366 • Toll Free: 800.883.1844 ext. 2 • www.gowanco.com

FIFRA §24(c) REGISTRATION
EPA SLN NO.: ME-XXXXXX
Approval Date: xx-xx-xx
Expiration Date: xx-xx-xx

SPECIAL LOCAL NEED REGISTRATION

**FOR DISTRIBUTION AND USE ONLY WITHIN THE STATE OF MAINE
FOR CONTROL OF SPOTTED WING DROSOPHILA IN BLUEBERRIES**

GOWAN MALATHION 8 FLOWABLE

**AGRICULTURAL INSECTICIDE
EPA Reg. No. 10163-21**

ACTIVE INGREDIENT:	% By Wt.
Malathion (O,O-dimethyl phosphorodithioate of diethyl mercaptosuccinate):	79.5%
INERT INGREDIENTS	20.5%
	TOTAL 100.0%

Contains Petroleum Distillates
Contains 8 lbs. Malathion per gallon

**KEEP OUT OF REACH OF CHILDREN
CAUTION**

- It is a violation of Federal law to use this product in a manner inconsistent with its labeling.
- Follow all applicable directions, restrictions, Worker Protection Standard (WPS) requirements, and precautions on the EPA registered label for Gowan Malathion 8 Flowable (EPA Reg. No. 10163-21).
- This labeling must be in the possession of the user at the time of pesticide application.

DIRECTIONS FOR USE

CROP	REI	RATE (PTS/ACRE)	PEST	RESTRICTIONS
BLUEBERRIES	12 hours	Up to 2.5	Spotted Wing Drosophila	The maximum number of applications per year is 2; and the minimum retreatment interval is 7 days. Do not exceed a total maximum use rate of malathion from all sources of 5 lbs ai per acre per season. Do not apply within 1 (one) day of harvest.

IMPORTANT: This product is sold subject to the Conditions of Sale and Warranty and Liability Limitations set forth on the container label.

24(c) REGISTRANT: Gowan Company
P.O. Box 5569
Yuma, AZ 85366-5569

GOWAN MALATHION 8 FLOWABLE

AGRICULTURAL INSECTICIDE

ACTIVE INGREDIENT:		% By Wt.
Malathion (O,O-dimethyl phosphorodithioate of diethyl mercaptosuccinate):	79.5%	
INERT INGREDIENTS	20.5%	
	TOTAL	100.0%

Contains Petroleum Distillates
Contains 8 lbs. Malathion per gallon
KEEP OUT OF REACH OF CHILDREN
CAUTION

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

FIRST AID Organophosphate Insecticide	
If swallowed	<ul style="list-style-type: none">• Immediately call a poison control center or doctor.• Do not induce vomiting unless told to by a poison control center or doctor.• Do not give any liquid to the person.• Do not give anything by mouth to an unconscious person.
If in eyes	<ul style="list-style-type: none">• Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing.• Call a poison control center or doctor for treatment advice.
If on skin or clothing	<ul style="list-style-type: none">• Take off contaminated clothing.• Rinse skin immediately with plenty of water for 15-20 minutes.• Call a poison control center or doctor for treatment advice.
If inhaled	<ul style="list-style-type: none">• Move person to fresh air.• If person is not breathing, call 911 or ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.• Call a poison control center or doctor for further treatment advice.
HOT LINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-888-478-0798 for emergency medical treatment information.	
NOTE TO PHYSICIAN	
Malathion upon use may cause cholinesterase inhibition. Atropine is antidotal. May pose an aspiration pneumonia hazard. Contains petroleum distillates.	

PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS AND DOMESTIC ANIMALS **CAUTION**

Harmful if swallowed. Avoid breathing of spray mist. Avoid contact with skin.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Some materials that are chemical-resistant to this product are barrier laminate, butyl rubber, nitrile, or viton. If you want more options, follow the instructions for category F on an EPA chemical resistance category selection chart.

Mixers, Loaders, Applicators, Flaggers, and other Handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves
- Shoes plus socks

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

NET CONTENTS _____ GALLONS

EPA Reg. No. 10163-21
EPA Est. No.

Gowan[®]
The Go To Company

Produced For:
Gowan Company
P. O. Box 5569
Yuma, AZ 85366-5569
800-883-1844

USER SAFETY RECOMMENDATIONS

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENGINEERING CONTROLS

Pilots must use an enclosed cockpit in a manner that is consistent with the WPS for Agricultural Pesticides [40 CFR 170.240(d)(6)]. Pilots must wear the PPE required on this labeling for applicators.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to aquatic organisms, including fish and invertebrates. This product may contaminate water through drift of spray in wind. This product has a high potential for runoff after application. Use care when applying in or to an area which is adjacent to any body of water, and do not apply when weather conditions favor drift from target area. Poorly draining soils and soils with shallow water tables are more prone to produce runoff that contains this product.

A level, well maintained vegetative buffer strip between areas to which this product is applied and surface water features such as ponds, streams, and springs will reduce the potential for contamination of water from rainfall-runoff. Runoff of this product will be reduced by avoiding applications when rainfall is forecasted to occur within 48 hours.

Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwater or rinsate.

This pesticide is highly toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds while bees are actively visiting the treatment area.

DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, and nurseries, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), and restricted-entry intervals. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted-entry interval (REI). The REI for each crop is listed in the directions for use associated with each crop.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water is:

- Coveralls
- Chemical-resistant gloves, made out of any waterproof material
- Shoes plus socks

NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard (WPS) for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, or nurseries.

Do not enter or allow others to enter until sprays have dried.

PRECAUTIONS AND RESTRICTIONS

In order that pesticide residues on food and forage crops will not exceed tolerances established by the Federal Food and Drug Administration, use only the specified rates and intervals, and do not apply closer to harvest than prescribed.

Unless otherwise specified, apply at the first sign of infestation and repeat as needed observing the use limitations listed for each specified crop in the application tables. Consult your State Agriculture Experiment Station or the State Agricultural Extension Service for additional information as the timing of applications needed will vary with local conditions.

Applications may be made by aircraft or by ground equipment according to the DIRECTIONS FOR DILUTION below. The amount of water needed to treat an acre varies, therefore the following directions are given to cover a broad range of applications.

Buffer Zones for Aerial Application:

When making a Non-ULV application with aerial application equipment, a minimum buffer zone of 25 feet must be maintained along any water body.

Do not use in greenhouses.

PHYTOTOXICITY ADVISORY STATEMENT

As is common with most emulsifiable concentrate formulations adverse effects, such as spotting or discoloration of the fruit or foliage can occur. Some conditions known to contribute to phytotoxicity include, but are not limited to: high temperatures, poor spray drying conditions, excessive spray runoff, certain spray mixtures, stage of crop development or tank mixes with other pesticides.

SPRAY DRIFT REQUIREMENTS

Observe the following requirements when spraying in the vicinity of aquatic areas such as, but not limited to lakes; reservoirs; rivers; permanent streams; marshes or natural ponds; estuaries and commercial fish ponds.

Droplet Size: Use the largest droplet size consistent with acceptable efficiency. Formation of very small droplets may be minimized by appropriate nozzle selection, by orienting nozzles away from the air stream as much as possible, and by avoiding excessive spray boom pressure.

For groundboom and aerial applications, use only medium or coarser spray nozzles according to ASAE (S572) definition for standard nozzles, or a volume mean diameter (VMD) of 300 microns or greater for spinning atomizer nozzles. In conditions of low humidity and high temperatures, applicators should use a coarser droplet size.

Wind Direction and Speed: Make aerial or ground applications when the wind velocity favors on target product deposition (approximately 3 to 10 mph). Do not apply when wind velocity exceeds 15 mph. Avoid applications when wind gusts approach 15 mph. For all non-aerial applications, wind speed must be measured adjacent to the application site on the upwind side, immediately prior to application.

Temperature Inversion: Do not make aerial or ground applications into areas of temperature inversions. Inversions are characterized by stable air and increasing temperatures with increasing distance above the ground. Mist or fog may indicate the presence of an inversion in humid areas. Where permissible by local regulations, the applicator may detect the presence of an inversion by producing smoke and observing a smoke layer near the ground surface. In conditions of low humidity and high temperatures, applicators should use a coarser droplet size.

Additional Requirements for Ground Applications: Spray should be released at the lowest height consistent with pest control and flight safety. Applications more than 10 feet above the crop canopy should be avoided. For groundboom applications, apply with nozzle height no more than 4 feet above the ground or crop canopy. For airblast applications, turn off outward pointing nozzles at row ends and when spraying the outer two rows. To minimize spray loss over the top in orchard applications, spray must be directed into the canopy.

Additional Requirements for Aerial Applications: For aerial applications, the spray boom should be mounted on the aircraft as to minimize drift caused by wingtip or rotor vortices. The minimum practical boom length should be used and must not exceed 75% of wing span or 90% rotor diameter. Aerial applicators must consider flight speed and nozzle orientation in determining droplet size. When applications are made with a cross-wind, the swath will be displaced downwind. The applicator must compensate for this displacement at the downwind edge of the application area by adjusting the path of the aircraft upwind.

DIRECTIONS FOR DILUTION

Rates are given in terms of pints of Malathion 8 Flowable per acre.

Dilute Application

Field and Row Crops: Use specified rate in 20 to 60 gallons of water per acre.

Trees and Vines: Use specified rate in 100 to 800 gallons of water per acre.

MIXING DIRECTIONS

Pour specified amount of product into spray tank nearly filled with water. Add balance of water to fill tank. Keep agitator running during filling and spraying operations. If mixture does not mix readily, but tends to separate as an oily layer, do not use as injury to plants may result. Do not combine with wettable powders unless previous use of the mixture has proven physically compatible and safe to plants. Always thoroughly emulsify this product with at least half of total water before adding wettable powders.

PREHARVEST INTERVAL

Minimum days between last application and harvest are given in () after each crop name.

TREES AND VINES

Under heavy pest pressure, use higher rates.

CROP	REI (HRS)	RATE (PTS/ACRE)	PESTS	COMMENTS
APRICOTS (7)	12	1.5	Aphid, Codling moth, European Lecanium scale, Orange tortrix, Soft brown scale, Terrapin scale	The maximum application rate is 1.5 pints of product per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.
AVOCADOS (7)	48	4.7	Green house thrips, Latania scale, Omnivorous looper, Soft brown scale, Orange tortrix	The maximum application rate is 4.7 pints of product per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 30 days.
BLACKBERRIES (1), BOYSENBERRIES (1), DEWBERRIES (1), LOGANBERRIES (1), RASPBERRIES (1)	12	2	Japanese beetle, Leafhoppers, Mites, Thrips	The maximum application rate is 2.0 pints of product per acre; the maximum number of applications per year is 3; and the minimum retreatment interval is 7 days.
		2	Aphid, Rose scale	
BLUEBERRIES (1)	12	1.25	Aphids, Blueberry maggot, Blueberry tip borer, Cherry fruitworm, Cranberry fruitworm, Japanese beetle, Plum curculio, Leafrollers, Sharp-nosed leafhopper, White Tussock moth	The maximum application rate is 1.25 pints of product per acre; the maximum number of applications per year is 3; and the minimum retreatment interval is 5 days.

TREES AND VINES

Under heavy pest pressure, use higher rates. (Continued)

CROP	REI (HRS)	RATE (PTS/ACRE)	PESTS	COMMENTS
CITRUS [GRAPEFRUIT, LEMONS, LIMES, ORANGES, TANGELOS, TANGERINES [Mandarin or Mandarin Oranges, Tangors, and other hybrids of tangerines with other citrus] (7)	72	CA: 7.5 All Other States: 4.5	Aphids, Black scale (single and off-brooded), California red scale, Citricola scale, Orange worm, Purple scale, Soft scale, Thrips, Yellow scale	Do not apply when trees are in bloom. FOR CALIFORNIA: The maximum application rate is 7.5 pints of product per acre; the maximum number of applications per year is 1. ALL OTHER STATES: The maximum application rate is 4.5 pints of product per acre; the maximum number of applications per year is 1.
		CA: 1 - 7.5 All Other States: 1 - 4.5	Mediterranean fruit fly	
KUMQUATS (7)	48	4.5	Aphids, Black scale (single and off-brooded), California red scale, Citricola scale, Orange worm, Purple scale, Soft scale, Thrips, Yellow scale	Do not apply when trees are in bloom. The maximum application rate is 4.5 pints product per acre; the maximum number of applications per year is 1.
CURRENTS (1)	12	1.25	Japanese beetle, Mites	The maximum application rate is 1.25 pints product per acre; the maximum number of applications per year is 3; the minimum retreatment interval is 7 days.
GOOSEBERRIES (3)	12	2	Currant aphid, Imported currantworm	The maximum application rate is 2.0 pints product per acre; the maximum number of applications per year is 3; the minimum retreatment interval is 7 days.
FIGS (5)	12	1.5	Dried fruit beetles, Vinegar flies	Apply with 1 - 2 gallons sulfured molasses per acre. The maximum application rate is 1.5 pints product per acre; the maximum number of applications per year is 2; the minimum retreatment interval is 5 days.
GRAPES (3)	72 girdling and tying 24 other activities	1.88	Drosophila, European fruit lecanium, Grape leafhopper, Japanese beetle, Leafhopper, Mealybug, Spider mites, Terrapin scale	Injury may occur to grape berries when applications are made after bloom. The maximum application rate is 1.88 pints product per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 14 days.
GUAVA (2) (Not Registered for Use in California)	12	.75 - 1.25	Fruit flies	Apply with 1 pound partially hydrolyzed yeast protein or enzymatic yeast hydrolyzate. The maximum application rate is 1.25 pints product per acre; the maximum number of applications per year is 13; and the minimum retreatment interval is 3 days.
MANGO (1) (Not Registered for Use in California)	12	0.9375	Fruit flies	The maximum application rate is 0.9375 pints product per acre; the maximum number of applications per year is 10; and the minimum retreatment interval is 7 days.
PASSION FRUIT (3) (Not Registered for Use in California)	12	1	Fruit flies	The maximum application rate is 1.0 pints product per acre; the maximum number of applications per year is 8; and the minimum retreatment interval is 7 days.
MACADAMIA NUTS (1)	12	0.94	Green Stink bug	The maximum application rate is 0.94 pints product per acre; the maximum number of applications per year is 6; and the minimum retreatment interval is 7 days.
NECTARINES (7)	24	3	Black cherry aphid, Black peach aphid, Green peach aphid, Japanese beetle, Rusty plum aphid	May be mixed with spray oil for dormant and delayed dormant applications. Follow spray oil manufacturer's directions. The maximum application rate is 3.0 pints product per acre; the maximum number of applications per year is 3; and the minimum retreatment interval is 7 days.
PEACHES (7)	24	1.25	Cottony peach scale, Lesser peach tree borer, Plum curculio, Oriental fruit moth, San Jose scale, Terrapin scale	The maximum application rate is 1.25 pints product per acre; the maximum number of applications per year is 3; and the minimum retreatment interval is 11 days.

TREES AND VINES

Under heavy pest pressure, use higher rates. (Continued)

CROP	REI (HRS)	RATE (PTS/ACRE)	PESTS	COMMENTS
PECANS (7)	24	2.5	Aphid, Mites, Pecan bud moth, Pecan leaf casebearer, Pecan nut casebearer, Pecan phyloxera	The maximum application rate is 2.5 pints product per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.
WALNUTS (7)	24	1.5 - 2.5	Aphid, Mites, Walnut husk fly	The maximum application rate is 2.5 pints product per acre; the maximum number of applications per year is 3; and the minimum retreatment interval is 7 days.

FIELD AND ROW CROPS

Under heavy pest pressure, use higher rates.

CROP	REI (HRS)	RATE (PTS/ACRE)	PESTS	COMMENTS
ALFALFA, BIRDSFOOT TREFOIL, CLOVER, LESPEDEZA, VETCH (0)	12	1 - 1.25	Alfalfa weevil larvae, Aphids, Armyworms, Clover leaf weevil, Grasshoppers, Lygus bugs, Pea aphid, Potato leafhoppers, Spider mites, Spittlebug, Vetch bruchid	Use higher rate for Armyworm control. Apply to alfalfa in bloom only in the evening or early morning when bees are not working in the fields or are not hanging on the outside of hives. The maximum application rate is 1.25 pints product per acre; the maximum number of applications is 2 per cutting; and the minimum retreatment interval is 14 days.
LEAFY VEGETABLES (EXCEPT BRASSICA VEGETABLES) CROP GROUPING: AMARANTH (LEAFY AMARANTH, CHINESE SPINACH, TAMPALA) (7), ARRUGULA (ROQUETTE) (7), CELTUCE (7), CHERVIL (7), CHRYSANTHEMUM-Edible-leafed, Garland (7), CORN SALAD (7), DOCK (SORREL) (7), FLORENCE FENNEL (7), ORACH (7), PURSLANE-Garden and Winter (7) (Not Registered for Use in California)	24	1 - 1.25	Aphids	The maximum application rate is 1.25 pints product per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.
DANDELIONS (7)	24	1.25	Aphids	The maximum application rate is 1.25 pints product per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.
PARSLEY (7)	24	1.5	Aphids	The maximum application rate is 1.5 pints product per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.
SWISS CHARD (14) (Not Registered for Use in California)	12	1.0	Aphids	The maximum application rate is 1.0 pints product per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.
CELERY (7)	24	1.0 - 1.5	Aphids, spider mite	The maximum application rate is 1.5 pints product per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.
LETTUCE, FIELD HEAD (14)	24	1.88	Aphids, Alfalfa loopers, Leafhoppers, Mites	The maximum application rate is 1.88 pints product per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 6 days.
LETTUCE, FIELD LEAF (14)	24	1.88	Aphids, Alfalfa loopers, Leafhoppers, Mites	The maximum application rate is 2.0 pints product per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 5 days.
ENDIVE, FIELD (7)	24	1.25	Aphids, Alfalfa loopers, Leafhoppers, Mites	The maximum application rate is 1.25 pints product per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.

FIELD AND ROW CROPS
Under heavy pest pressure, use higher rates. (Continued)

CROP	REI (HRS)	RATE (PTS/ACRE)	PESTS	COMMENTS
SPINACH (7)	12	1.0	Aphids	The maximum application rate is 1.0 pints product per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.
BEETS, Table (7)	12	1.25	Aphids, Beet armyworm, Blister beetles, Flea beetles	Do not use on Sugar Beets. The maximum application rate is 1.25 pints product per acre; the maximum number of applications per year is 3; and the minimum retreatment interval is 7 days.
COLE CROPS (Brassica (cole) Leafy Vegetable crop group: BROCCOLI (2), BROCCOLI RAAB (RAPINI) (2), BRUSSELS SPROUTS (2), CAULIFLOWER (2), CAVALO BROCCOLO (2), CHINESE BROCCOLI (2), CHINESE MUSTARD CABBAGE (7), MIZUNA (7), MUSTARD SPINACH (7), RAPE GREENS (7)	48	1.25	Aphids, Cabbage loopers, Flea beetles, Imported cabbage worms	The maximum application rate is 1.25 pints product per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.
CABBAGE (7)	48	1.25	Aphids, Cabbage loopers, Flea beetles, Imported cabbage worms	The maximum application rate is 1.25 pints product per acre; the maximum number of applications per year is 6; and the minimum retreatment interval is 7 days.
CHINESE CABBAGE (BOK CHOY, NAPA) (7)	48	1.25	Aphids, Cabbage loopers, Flea beetles, Imported cabbage worms	The maximum application rate is 1.25 pints product per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.
COLLARDS (7)	12	1	Aphids, Cabbage loopers, Flea beetles, Imported cabbage worms	The maximum application rate is 1.0 pints product per acre; the maximum number of applications per year is 3; and the minimum retreatment interval is 7 days.
KALE (7), MUSTARD GREENS (7)	12	1	Aphids, Cabbage loopers, Flea beetles, Imported cabbage worms	The maximum application rate is 1.0 pints product per acre; the maximum number of applications per year is 3; and the minimum retreatment interval is 5 days.
KOHLRABI (7)	24	1.25	Aphids, Cabbage loopers, Flea beetles, Imported cabbage worms	The maximum application rate is 1.25 pints product per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.
CORN-Field (7)	72 hours for detasseling 12 hours for all other activities	0.61	Aphids, Corn rootworm adults, Sap beetles, Thrips, Young grasshoppers	CAUTION: Injury may occur in whorl and silk stages. The maximum application rate is 0.61 pints product per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.
COTTON (7)	48	2.5	Aphids, Brown cotton leafworm, Cotton leaf perforator, Leafhoppers, Spider mites, Whitefly, Boll weevils, Cotton fleahoppers, Fall armyworms, Grasshoppers, Garden webworms and Lygus	Do not graze or feed forage to livestock. The maximum application rate is 2.5 pints product per acre; the maximum number of applications per year is 3; and the minimum retreatment interval is 7 days.
CUCUMBERS (1)	24	1.75	Aphids, Cucumber beetles, Cutworms, Darkling ground beetles, Leafhoppers, Pickleworm, Spider mites, Squash vine borer, Thrips	Do not apply unless plants are dry. For vine borer apply to stems and vines at base of plant. The maximum application rate is 1.75 pints product per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.
SQUASH, Summer (1)	24	1.75	Aphids, Cucumber beetles, Cutworms, Darkling ground beetles, Leafhoppers, Pickleworm, Spider mites, Squash vine borer, Thrips	The maximum application rate is 1.75 pints product per acre; the maximum number of applications per year is 3; and the minimum retreatment interval is 7 days.
SQUASH, Winter (1)	12	1	Aphids, Cucumber beetles, Cutworms, Darkling ground beetles, Leafhoppers, Pickleworm, Spider mites, Squash vine borer, Thrips	The maximum application rate is 1.0 pints product per acre; the maximum number of applications per year is 3; and the minimum retreatment interval is 7 days.

FIELD AND ROW CROPS
Under heavy pest pressure, use higher rates. (Continued)

CROP	REI (HRS)	RATE (PTS/ACRE)	PESTS	COMMENTS
EGGPLANT (3)	12	1.56	Aphids, Spider mites, Lace bugs	The maximum application rate is 1.56 pints product per acre; the maximum number of applications per year is 4; and the minimum retreatment interval is 5 days.
FLAX (52)	12	0.5	Grasshoppers	The maximum application rate is 0.5 pints product per acre; the maximum number of applications per year is 3; and the minimum retreatment interval is 7 days.
GARLIC (3)	24	1 - 1.56	Aphids, Thrips	The maximum application rate is 1.56 pints product per acre; the maximum number of applications per year is 3; and the minimum retreatment interval is 7 days.
LEEKs (3), SHALLOTS (3)	24	1 - 1.56	Aphids, Thrips	The maximum application rate is 1.56 pints product per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.
GRASSES (Forage, Hay) (0)	12	1 - 1.25	Aphids, Grasshoppers, Leafhoppers	The maximum application rate is 1.25 pints product per acre; the maximum number of applications per year is 1.
HOPS (10) (Not Registered for Use in California)	12	0.63	Aphids	The maximum application rate is 0.63 pints product per acre; the maximum number of applications per year is 3; and the minimum retreatment interval is 7 days.
HORSERADISH (7), PARSNIPS (7), SALSIFY (7)	24	1.25	Aphids, Diamondback moths, Flea beetles, Leafhoppers	The maximum application rate is 1.25 pints product per acre; the maximum number of applications per year is 3; and the minimum retreatment interval is 7 days.
RADISHES (7)	12	1	Aphids, Diamondback moths, Flea beetles, Leafhoppers	The maximum application rate is 1.0 pints product per acre; the maximum number of applications per year is 3; and the minimum retreatment interval is 7 days.
MUSHROOMS (1) (Not Registered for Use in California)	12	1.7	Phorid flies, Sciarid flies	Apply in 130 gallons of water per acre, or 1 tablespoon per 3 gallons of water per 1000 square foot bed. Make thorough application as soon as possible after picking. The maximum application rate is 1.7 pints product per acre; the maximum number of applications per year is 4; and the minimum retreatment interval is 3 days.
OKRA (1) (Not Registered for Use in California)	12	1.2	Aphids, Japanese beetles	The maximum application rate is 1.2 pints product per acre; the maximum number of applications per year is 5; and the minimum retreatment interval is 7 days.
ONIONS- Bulb and Green (3)	12	1 - 1.56	Thrips	The maximum application rate is 1.56 pints product per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.
		1.5	Onion maggots	
PEAS, DRIED (3)	12	1	Aphids, Pea weevils	Do not graze or feed forage to livestock. Dried peas can be treated by ground and foliar applications only. The maximum application rate is 1.0 pints product per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.
PEAS, GREEN (3)	12	1	Aphids, Pea weevils	Do not graze or feed forage to livestock. Green peas can be treated by ground, foliar and aerial applications. The maximum application rate is 1.0 pints product per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.
PEPPERMINT (7), SPEARMINT (7)	12	0.94	Adult flea beetles, Leafhoppers	The maximum application rate is 0.94 pints product per acre; the maximum number of applications per year is 3; and the minimum retreatment interval is 7 days.
PEPPERS (Field) (3)	12	1.5	Aphids, Pepper maggots	The maximum application rate is 1.5 pints product per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 5 days.

FIELD AND ROW CROPS
Under heavy pest pressure, use higher rates. (Continued)

CROP	REI (HRS)	RATE (PTS/ACRE)	PESTS	COMMENTS
POTATOES (0)	12	1	False chinch bugs, Leafhoppers, Mealybugs	The maximum application rate is 1.5 pints product per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.
		1.5	Aphids, Blister beetles	
RICE-Domestic, Grain or Wild (7)	12	1.25	Rice leaf miners, Rice stink bugs	Do not apply Propanil within 15 days of Malathion treatment. Broadcast use only over intermittently flooded areas. Application may not be made around bodies of water where fish or shellfish are grown and/or harvested commercially. The maximum application rate is 1.25 pints product per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.
RUTABAGAS (7)	12	1	Aphids	The maximum application rate is 1.0 pints product per acre; the maximum number of applications per year is 3; and the minimum retreatment interval is 7 days.
SMALL GRAINS (BARLEY) (7)	12	1 - 1.25	Armyworms, English grain aphids, Grasshoppers, Greenbugs	The maximum application rate is 1.25 pints product per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.
SMALL GRAINS (OATS, RYE, WHEAT[spring and summer]) (7)	12	1	Armyworms, English grain aphids, Grasshoppers, Greenbugs	The maximum application rate is 1.0 pints product per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.
SORGHUM-Grain (7)	12	1.0	Greenbugs	Do not graze or feed forage to livestock. The maximum application rate is 1.0 pints product per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.
STRAWBERRIES (3)	12	1.5 - 2	Aphids, Field crickets, Lygus bugs, Potato leafhoppers, Spider mites, Spittlebugs, Strawberry leafrollers, Strawberry root weevils, Thrips, Whiteflies	The maximum application rate is 2.0 pints product per acre; the maximum number of applications per year is 4; and the minimum retreatment interval is 7 days.
SWEET CORN (Field) (5)	72 detassling 12 other activities	1	Japanese beetles	CAUTION: Injury may occur in whorl and silk stages. The maximum application rate is 1.0 pints product per acre; the maximum number of applications per year is 5; and the minimum retreatment interval is 5 days.
SWEET POTATOES (3)	12	1 - 1.5	Leafhoppers	The maximum application rate is 1.5 pints product per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.
		1.5	Morning Glory leafminers	
TOMATOES (Field) (1)	12	1.5	Aphids, Spider mites, Drosophila flies	Apply a full coverage application to fruit and foliage. The maximum application rate is 1.5 pints product per acre; the maximum number of applications per year is 4; and the minimum retreatment interval is 5 days.
WATERCRESS (7)	12	1	Aphids	The maximum application rate is 1.0 pints product per acre; the maximum number of applications per year is 5; and the minimum retreatment interval is 3 days.

OUTDOOR ORNAMENTALS

Note: Before treating a large number of ornamental plants with Gowan Malathion 8 Flowable alone or as a tank mixture with any other material, make a test application on a few plants and observe for 7-10 days prior to treating large areas to reduce the possibility of plant injury.

CROP	REI (HRS)	RATE	PESTS	COMMENTS
FLOWERS, SHADE TREES and SHRUBS	12	1 pint in 100 gals of water as a dilute spray	Aphids, Euonymus scales, European pine shoot moths, Four-lined leaf bugs, Japanese beetle adults, Lace scales, Mealybugs, Millipedes, Oyster shell scales, Potato leafhoppers, Rose leafhoppers, Scurfy scales, Spider mites, Springtails, Sowbugs, Tarnished plant bugs, Thrips, Whiteflies	CAUTION: Avoid use on certain ferns including Boston, Maidenhair and Pteris, as well as some species of Crassula and Canaetri Juniper. For Oyster shell, Fletch, Juniper, Oak kermes and Pine needle scales apply when scale crawlers have settled on foliage. The maximum number of applications per year is 2; and the minimum retreatment interval is 10 days.
		1.25 pints in 100 gals of water as a dilute spray	Azalea scales, Bagworms, Birch leafminers, Boxwood leafminers, Fletch scales, Florida-red scales, Juniper scales, Magnolia scales, Oak kermes, Pine leaf scales, Tent caterpillars	
		1.6 pints in 100 gals of water	Black scale crawlers, Monterey pine scales	
		2 pints in 100 gals of water	Pine needle scales, Wax scales	

SLASH PINE, PINE SEED ORCHARDS, and CHRISTMAS TREE PLANTATIONS

CROP	REI (HRS)	PESTS	RATE	COMMENTS
SLASH PINE, and PINE SEED ORCHARDS	12	Slash pine flower thrips, European pine sawfly	For ground application, mix 0.4 gallons of Malathion 8 Flowable in 100 gallons of water.	Apply 3/4 gallon of the mixture per tree on the smallest flowering trees. Mist blowers or airblast sprays may be used. The maximum application rate is 3.2 pints product per acre; the maximum number of applications per year/growing season is 2; and the minimum retreatment interval is 7 days.
			For air application, mix 0.4 gallons of Malathion 8 Flowable in at least 10 gallons of water.	Apply a minimum of 10 gallons of mixture per acre. Make two applications, the first when female flowers are in twig bud stage, the second one week prior to maximum flower receptivity to pollen. The maximum application rate is 3.2 pints product per acre; the maximum number of applications per year/growing season is 2; and the minimum retreatment interval is 7 days.
CHRISTMAS TREE PLANTATIONS	12	Slash pine flower thrips, European pine sawfly	For ground application, mix 0.4 gallons of Malathion 8 Flowable in 100 gallons of water.	Apply 3/4 gallon of the mixture per tree on the smallest flowering trees. Mist blowers or airblast sprays may be used. The maximum application rate is 3.2 pints product per acre; the maximum number of applications per year is 2.
			For air application, mix 0.4 gallons of Malathion 8 Flowable in at least 10 gallons of water.	Apply a minimum of 10 gallons of mixture per acre. Make two applications, the first when female flowers are in twig bud stage, the second one week prior to maximum flower receptivity to pollen. The maximum application rate is 3.2 pints product per acre; the maximum number of applications per year is 2.

MOSQUITO CONTROL

AROUND THE OUTSIDE OF BUILDINGS

Around lower outside foundations of homes, yards - spot treatment only, out-door garbage cans, and garbage dumps: Apply 0.2439 gallons of Malathion 8 Flowable undiluted per 1000 sq. ft. on painted surfaces. Apply 0.2439 gallons of Malathion 8 Flowable undiluted per 1000 sq. ft. on unpainted surfaces.

CULL FRUIT AND VEGETABLE DUMP

Around cull fruit and vegetable dumps: Apply 6.857 pounds of Malathion 8 Flowable undiluted per 1000 sq. ft. on painted surfaces. Apply 2 gallons of Malathion 8 Flowable undiluted per 1000 sq. ft. on unpainted surfaces.

APPLICATION THROUGH IRRIGATION SYSTEMS - CHEMIGATION

Apply this product only through sprinkler, including center pivot, lateral move, end tow side (wheel) roll, traveler, big gun, solid set, or hand move, or drip (including surface and subsurface) irrigation systems. Do not apply this product through any other type of irrigation system. Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from nonuniform distribution of treated water.

If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers or other experts. Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label prescribed safety devices for public water systems are in place.

A person knowledgeable of the chemigation system and responsible for its operation or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

Mix in clean supply tank the specified amount of this product for acreage to be covered, and needed quantity of water.

This product should not be tank-mixed with other pesticides, surfactants or fertilizers unless prior use has shown the combination noninjurious under your conditions of use. Follow precautionary statements and directions for all tank-mix products.

On all crops, use sufficient gallonage of water to obtain thorough and uniform coverage, but not cause runoff or excessive leaching. This will vary depending on equipment, pest problem and stage of crop growth. Application of more or less than optimal quantity of water may result in decreased chemical performance, crop injury or illegal pesticide residues.

Meter this product into the irrigation water uniformly during the period of operation. Do not overlap application. Follow specified label rates, application timing, and other directions and precautions for crop being treated. Continuous mild agitation of pesticide mixture may be needed to assure a uniform application, particularly if the supply tank requires a number of hours to empty.

Do not apply when wind speed favors drift beyond the area intended for treatment.

CHEMIGATION SYSTEMS CONNECTED TO PUBLIC WATER SYSTEMS

Note: Gowan Company does not encourage connecting chemigation systems to public water supplies. The following information is provided for users who have diligently considered all other application and water supply options before electing to make such a connection.

Public water systems means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. Chemigation systems connected to public water systems must contain a functional reduced-pressure zone, backflow preventer (RPZ) or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the flow outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.

The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection.

The pesticide injection pipeline must contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shutdown.

The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops, or in cases where there is no water pump, when the water pressure decreases to the point where pesticide distribution is adversely affected.

Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock. Do not apply when wind speed favors drift beyond the area intended for treatment.

SPRINKLER CHEMIGATION (FOLIAR SPRAY USES)

The system must contain a functional check valve, vacuum relief valve and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.

The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops. The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.

Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

Do not apply when wind speed favors drift beyond the area intended for treatment.

DRIP (INCLUDING SURFACE AND SUBSURFACE) CHEMIGATION

The system must contain a functional check valve, vacuum relief valve and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.

The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.

The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.

The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops. The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.

Systems must use a metering pump such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

STORAGE AND DISPOSAL

DO NOT CONTAMINATE water, food or feed by storage or disposal.

PESTICIDE STORAGE: Gowan Malathion 8 Flowable should be stored in the original unopened container in a secure, dry place. Do not contaminate with other pesticides or fertilizers. The product should never be heated above 55°C (131°F), and should not be stored for long periods of time at a temperature in excess of 25°C (77°F).

PESTICIDE DISPOSAL: To avoid wastes, use all materials in this container by application according to label directions. If wastes cannot be avoided, offer remaining product to a waste facility or pesticide disposal program (often such programs are run by state or local governments or by industry).

CONTAINER DISPOSAL: Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. After cleaning, if recycling is not available, puncture and dispose of in a sanitary landfill.

FOR 24-HOUR EMERGENCY ASSISTANCE (SPILL, LEAK OR FIRE), CALL CHEMTREC® (800) 424-9300
For other product information, contact Gowan Company or see Material Safety Data Sheet.

NOTICE OF CONDITIONS OF SALE AND WARRANTY AND LIABILITY LIMITATIONS

Important: Read the entire Directions for Use and Notice of Conditions of Sale and Warranty and Liability Limitations before using this product. If terms are not acceptable return the unopened container for a full refund.

Our directions for use of this product are based on tests believed to be reliable. However, it is impossible to eliminate all risk associated with the use of this product. Crop injury, inadequate performance, or other unintended consequences may result due to soil or weather conditions, off target movement, presence of other materials, method of use or application, and other factors, all of which are beyond the control of Gowan Company. All such risks shall be assumed by the Buyer and User.

Gowan Company warrants that this product conforms to the specifications on the label when used in strict conformance with Direction for Use, subject to the above stated risk limitations. GOWAN COMPANY MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY. TO THE FULLEST EXTENT PERMITTED BY LAW, GOWAN COMPANY'S EXCLUSIVE LIABILITY FOR ANY AND ALL LOSSES, INJURIES OR DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT WHETHER IN CONTRACT, WARRANTY, TORT, NEGLIGENCE, OR ANY OTHER LEGAL THEORY IS STRICTLY LIMITED TO THE PURCHASE PRICE PAID OR REPLACEMENT OF PRODUCT, AT GOWAN COMPANY'S SOLE DISCRETION.

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01-R0811



MATERIAL SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Formulator: Gowan Company
P.O. Box 5569
Yuma, Arizona 85366-5569
(928) 783-8844

Emergency Phone: (928) 783-3803
For 24-Hour Emergency Assistance (Spill, Leak, Fire, or Exposure), Call CHEMTREC®:
For MEDICAL Emergency:

Inside the U.S.: (800) 424-9300
Outside the U.S.: (703) 527-3887
(888) 478-0798

Product: Malathion 8 Flowable

EPA Signal Word: Caution **EPA Registration No.:** 10163-21

Active Ingredient: Malathion (79.5%) **CAS No.:** 121-75-5

Chemical Name: O,O-Dimethyl dithiophosphate of diethyl mercaptosuccinate

Chemical Class: Organophosphate

2. HAZARDS IDENTIFICATION

Physical Properties

Appearance: Clear, light amber colored liquid
Odor: Mild mercaptan odor

Symptoms of Overexposure

Malathion causes inhibition of cholinesterase activity. Symptoms of intoxication include depressed ChE activity, headache, lacrimation, excessive salivation, anorexia, vomiting, uneasiness, restlessness, anxiety, ataxia, tremors, sweating, coma with absence of reflexes, dyspnea, cough, fluid in the lungs, non-reactive pin-point pupils, blurred vision, diarrhea, nausea, abdominal cramps, involuntary urination, muscular twitching, fasciculation, muscle cramping, weakness, and cyanosis. Severe overexposure may lead to muscular fibrillation, pulmonary edema, convulsions, possible cardiac arrest and death. Exposure to butanol in this formulation may produce drowsiness and irritation of the throat.

Medical Conditions Likely to be Aggravated by Exposure

Pre-existing skin, eye, liver, kidney and nervous disorders. Persons with depressed cholinesterase levels or hemolytic anemia, or who are under treatment with morphine, theophylline, aminophylline or phenothiazine drugs may show pronounced effects from exposure to this product.

Primary Routes of Exposure

Harmful if inhaled, ingested or if eye and skin contact occurs.

Hazardous Decomposition Products

Carbon monoxide, carbon dioxide, sulfur dioxide, phosphorus trioxide, methyl mercaptan, hydrogen sulfide, and dimethyl sulfide.

Unusual Fire, Explosion, and Reactivity Hazards

Containers in fire may burst or explode from excessive heat. Stay well back from fire area. Vapors may travel along floor to ignition source and flash back.

3. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT NAME	OSHA – PEL	ACGIH – TLV	OTHER	NTP/IARC/OSHA CARCINOGEN
Malathion (79.5%)	15.0 mg/m ³	10.0 mg/m ³	Not established	No
1-Butanol (3.1%) CAS# 71-36-3	300 mg/m ³	152 mg/m ³	Not established	No

Only the identities of the active ingredient(s) and any *hazardous* inert ingredients are listed. Specific information on all of this product's ingredients can be obtained by the treating medical professional or spill emergency responder for the management of exposures, spills, or safety assessments.

4. FIRST AID MEASURES

IF SWALLOWED: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

IF INHALED: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

IF ON SKIN CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes and then continue rinsing eye. Call a poison control center or doctor for treatment advice.

Have the product container or label with you when calling a poison control center or doctor or going for treatment.

FOR MEDICAL EMERGENCIES INVOLVING THIS PRODUCT , CALL TOLL FREE: 1-888-478-0798

5. FIRE FIGHTING MEASURES

Flashpoint (test method): > 200°F (TCC)

Appropriate Extinguishing Media

Dry chemical, foam, CO₂, water spray or fog. Avoid use of heavy water stream.

Fire Fighting Guidance

Smoke and fumes from fire may contain hazardous components. Use self-contained breathing apparatus and full-protective clothing. Fight fire from upwind side. Avoid run-off. Keep non-essential personnel away from immediate fire area, and out of any fall-out or run-off areas. If water is used to fight fire or cool containers, contain run-off by diking to prevent contamination of water supplies.

Unusual Fire, Explosion, and Reactivity Hazards

Containers in fire may burst or explode from excessive heat. Stay well back from fire area. Vapors may travel along floor to ignition source and flash back.

6. ACCIDENTAL RELEASE MEASURES

In Case of Spills or Leaks

Isolate and post spill area. Wear prescribed protective clothing and equipment. Keep out animals and unprotected persons. Keep material out of streams and sewers. Dike to confine spill, and absorb with an absorbent such as clay, sand or cat litter. Vacuum, shovel or pump wastes into an approved drum. To decontaminate spill area, tools and equipment, wash with a suitable solution (i.e., organic solvent, detergent, bleach or caustic), and add the solution to the drums of wastes already collected. Label drums for contents. Dispose of drummed wastes, including decontamination solution, according to the method outlined in Section 13 – Disposal Considerations.

7. HANDLING AND STORAGE

Precautions in Storing

DO NOT contaminate water, food or feed by storage or disposal. Store in a cool, dry, well-ventilated place. Avoid excess heat. Store in original containers only. Keep out of reach of children and animals. Do not contaminate other pesticides or fertilizers by storage or disposal.

Storage

Store in a cool, dry, well-ventilated place. Avoid excess heat. Store in original containers only. Keep out of reach of children and animals.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

Thoroughly ventilate all transport vehicles prior to unloading. Use local exhaust at all process locations to control employee exposure.

Eye/Face

Not required; use normal safety precautions.

Skin Protection

Applicators and other handlers must wear long-sleeved shirt and long pants, chemical-resistant gloves such as barrier laminate, butyl rubber \geq 14mils, nitrile \geq 14mils, or Viton \geq 14mils, and shoes plus socks.

Respiratory Protection

Not required; use normal safety precautions.

Additional Protection

Information

Inspect gloves regularly for leaks. Emergency eyewash fountain should be located nearby. Follow manufacturer's instructions for cleaning/maintaining personal protective equipment (PPE). If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

Applicators/Handlers

Applicators and other handlers must wear long-sleeved shirt and long pants, chemical-resistant gloves such as barrier laminate, butyl rubber \geq 14mils, nitrile \geq 14mils, or Viton \geq 14mils, and shoes plus socks.

User Safety

Recommendations

Users should wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Clear, light amber colored liquid

Odor: Mild mercaptan odor

Melting Point: Not applicable

Boiling Point: $> 300^{\circ}\text{F}$

Specific Gravity/

Density: 1.21 / 10.06 lbs./gal

Solubility in H₂O

Malathion Emulsifies

Vapor Pressure

Malathion 31 (Reid-ASTM D323)

10. STABILITY AND REACTIVITY

Stability: Stable

Hazardous

Polymerization: Will not occur

Decomposition

Products: Carbon monoxide, carbon dioxide, sulfur dioxide, phosphorus trioxide, methyl mercaptan, hydrogen sulfide, and dimethyl sulfide.

Hazardous

Mixtures: None known

Conditions

To Avoid: Excessive heat and fire, alkalis and oxidizers. Thermal decomposition and burning may produce highly toxic by-products.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity/Irritation Studies

Ingestion:	Acute oral LD ₅₀ =5400(M) / 5700(F) mg/kg (rat)
Dermal:	Acute dermal LD ₅₀ >2000 mg/kg (rat)
Inhalation:	Acute inhalation LC ₅₀ >5.2 mg/L (rat)
Eye Irritation:	Slight conjunctival irritation: clear by 7 days (rabbit)
Skin Irritation:	Slight dermal irritant (rabbit)
Skin Sensitizer:	Not a sensitizer (guinea pig)

Mutagenic Potential

None

Reproductive Hazard Potential

Acceptable

Chronic/Subchronic Toxicity Studies

Acceptable

Carcinogenic Potential

Acceptable

12. ECOLOGICAL INFORMATION

Summary of Effects

Malathion

This pesticide is toxic to fish, aquatic invertebrates and aquatic life stages of amphibians. For terrestrial uses, do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment wash waters. This product is highly toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are actively visiting the treatment area.

13. DISPOSAL CONSIDERATION

Pesticide Disposal

Pesticide wastes are toxic. 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 the 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 procedures approved by State and local authorities.

14. TRANSPORT INFORMATION

DOT Classification

Not regulated.*

*For 30 gallon and 55 gallon containers DOT classification will be:

UN 3082, RQ, Environmentally Hazardous Substance, Liquid, N.O.S., (Malathion), 9, PG III

International Maritime Organization

UN 3082, Environmentally Hazardous Substance, Liquid, N.O.S., (Malathion), 9, PG III, Marine Pollutant, NAERG# 171

International Civil Aviation Organization

UN 3082, Environmentally Hazardous Substance, Liquid, N.O.S., (Malathion), 9, PG III, Marine Pollutant, NAERG# 171

15. REGULATORY INFORMATION

SARA Title III Classification

Section 302/304: Not applicable
Section 311/312: Immediate (acute) health hazard
Fire hazard
Section 313 chemical(s): Malathion, 1-Butanol

Proposition 65

Not applicable

CERCLA Reportable Quantity (RQ)

12.5 gals. of product (100 lbs. of Malathion)

RCRA Classification

Under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste.

TSCA Status

Exempt from TSCA

16. OTHER INFORMATION

NFPA Hazard Ratings

Health: 2
Flammability: 2
Reactivity: 0

0	Least
1	Slight
2	Moderate
3	High
4	Severe

Notice: The information and recommendations contained herein are provided in good faith and are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information herein.

Prepared By:

Gowan Company
(928) 783-8844