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PM 14 10163-44

10/15

AUG 15 1991



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

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

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

Dear Ms. Stout:

Subject: Prokil Malathion ULV
EPA Registration No. 10163-44
Your Application for Amendment Dated July 26, 1991

The labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, is acceptable provided that you:

1. Make the labeling changes listed below before you release the product for shipment bearing the revised labeling:
 - a. The Fish and Wildlife statement under ENVIRONMENTAL HAZARDS should be revised to read "This product is toxic to fish, aquatic invertebrates, and aquatic life stages of amphibians. Do not apply . . . washwaters."
 - b. Under DIRECTIONS FOR USE add the statement "Do not apply this product through any type of irrigation system."
2. Submit a copy of your final printed labeling before you release the product for shipment.

If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA section 6(e). Your release for shipment of the product constitutes acceptance of these conditions.

A stamped copy of the label is enclosed for your records.

Sincerely yours,

Robert A. Forrest
Product Manager (14)
Insecticide-Rodenticide Branch
Registration Division (H7504C)

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ACCEPTED
with COMMENTS
In EPA Letter Dated:

Prokil Malathion ULV

AUG 15 1991

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

10163-44

ACTIVE INGREDIENT:

Malathion: O,O-dimethyl phosphorodithioate of diethyl mercaptosuccinate.....91.0%

INERT INGREDIENTS.....9.0%

TOTAL 100.0%

(One gallon contains 9.33 pounds of malathion)

KEEP OUT OF REACH OF CHILDREN

CAUTION!

PRECAUCION

PRECAUCION AL USUARIO: Si usted no lee ingles, no use este producto hasta que la etiqueta le haya sido explicada ampliamente.

STATEMENT OF PRACTICAL TREATMENT

IF SWALLOWED: Call a physician or Poison Control Center. Drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger. Do not give anything by mouth to an unconscious person.

IF ON SKIN: Wash with plenty of soap and water. Get medical attention.

IF IN EYES: Flush with plenty of water. Call a physician if irritation persists.

IF INHALED: Remove victim to fresh air.

NOTE TO PHYSICIAN: This product may cause cholinesterase inhibition. Atropine is antidotal. 2-PAM may be effective as an adjunct to atropine.

See next page for additional Precautionary Statements

Net Contents _____ Gallons

Gowan Company

AGRICULTURAL CHEMICALS

12300 E. County 8th Street

P.O. Box 8000

Yuma, AZ 85306

(602) 783-8844

E.P.A. Reg. No. 10163-44 AA

E.P.A. Est. No. 10163-AZ-1

3/91

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS (AND DOMESTIC ANIMALS)

CAUTION

Harmful if swallowed, inhaled or absorbed through skin. Avoid breathing spray mist. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse. Do not contaminate food or feed products.

ENVIRONMENTAL HAZARDS

This product is toxic to fish and aquatic invertebrates. Do not apply directly to water except as specified on this label. Drift and runoff may be hazardous to aquatic organisms in areas near the application site. Do not contaminate water when disposing of equipment washwaters.

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 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.

Prokil Malathion (ULV) may only be used in accordance with the directions in this label or approved supplementary labeling. Read all directions carefully before using.

Undiluted spray droplets of Prokil Malathion (ULV) will permanently damage automobile paint. If accidental exposure does occur, the vehicle should be washed immediately.

STORAGE AND DISPOSAL

Do not store in any premises occupied by humans or animals.

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

Pesticide Disposal: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

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.

Before using, read the directions contained in this label for the proper methods and procedures which must be followed to achieve effective insect control and avoid permanent damage to automobile and other paint finishes.

MOSQUITO CONTROL IN POPULATED AND RURAL AREAS

IMPORTANT NOTICE

TO BE APPLIED ONLY BY TRAINED PERSONNEL OF PUBLIC HEALTH ORGANIZATIONS,
MOSQUITO ABATEMENT DISTRICTS OR PEST CONTROL OPERATORS.

AERIAL APPLICATION

ADULT MOSQUITO CONTROL OVER CITIES, TOWNS, AND OTHER AREAS WHERE AUTOMOBILES, TRAILERS, TRUCKS AND PLEASURE BOATS ARE PRESENT: Apply 2.6 to 3.0 fluid ounces of *Permethrin* per acre. Apply only when weather conditions are favorable. Wind and rising air currents may cause undesirable spray drift and reduce insect control.

IMPORTANT--Undiluted spray droplets of this product will permanently damage vehicle paint finishes unless the aircraft used for the ultra low volume application meets all of the specifications listed below.

Fixed Wing Aircraft

1. Aircraft is operated at 150 mph or more.
2. There are no leaks in the ultra low volume spray system.
3. Nozzles are placed on the boom at a 45° angle down and into the wind.
4. Diaphragm check valves are used on all nozzles to insure positive cutoff of the spray.
5. Dosage of this product does not exceed 3 fluid ounces per acre.
6. The spray system produces droplets of this product in the 50 to 60 mass median diameter (MMD) micron range, with no more than 10% of the droplets exceeding 100 microns, as determined by readings made from microscope slides coated with DRI-FILM¹ or TEFLON².

¹Trademark of General Electric Company

²Trademark of E. I. duPont de Nemours & Co., Inc.

Helicopter

Equipment specifications

1. Rotary nozzle equivalent to Beecomist Spray Head Assembly Model: No. 350 equipped with:

- a. a direct reading RPM tachometer or low RPM signal light readily visible to operator;
- b. a stainless steel porous metal sleeve, 20 micron pore size, dynamically balanced to the nozzle;
- c. a diaphragm check valve as near to the rotary nozzle as possible to insure positive cut off of the spray;
- d. nozzle on-off switch separate from main switch and pump switch.

2. Minimum no-load nozzle speed of 10,500 RPM.

3. A continuous nonpulsating metered flow must be maintained by a variable speed metering pump equipped with:

- a. a positive cut off valve between tank and pump;
- b. a flow gauge or tachometer visible to operator;
- c. a pump on-off switch separate from main switch and nozzle switch.

4. Maximum flow rate of 0.5 gallon per minute per nozzle.

5. Rotary nozzle must be mounted behind and below the boom with the sleeve directed toward the rear of the aircraft and parallel to the ground during flight. Nozzle must be positioned to minimize air turbulence and the collection of *Prokil Malathion* ULV droplets on mounting brackets, feed lines, fittings, etc., or any part of the aircraft.

Operating Procedures

1. *Prokil Malathion* ULV must be prefiltered through a 10 micron filter prior to transfer into helicopter tank. A 50 mesh stainless steel line strainer must be installed in the pump feed line.

2. Entire system, including tank, pump, nozzle and feed lines, to be used only for application of *Prokil Malathion* ULV.

3. Entire system must be inspected daily to insure that there are no leaks.

4. Sleeve must be removed and cleaned immediately after each use by washing with hot water and blowing dry from outside in with clean air.

5. Rotating nozzle must be turned on and operating before turning on pump. For shut off, pump must be shut off and lines cleared prior to stopping nozzle rotation.

6. Dosage of Prokil Malathion or does not exceed 3 fluid ounces per acre.

7. The spray system must produce droplets of Prokil Malathion ULV with a mass median diameter (MMD) of less than 50 microns, with no more than 2.5% of the droplets exceeding 100 microns, as determined by readings made from microscope slides coated with DRI-FILM or TEFLON.

GROUND APPLICATION

Thermal Aerosols or Fogs

Prokil Malathion ULV

For control of adult mosquitoes with thermal aerosols or fogs, apply ~~BRITTON-ULV~~ at the rate of 6-8 oz. actual/gallon (3.9-5.2 gallons ~~BRITTON~~ ULV in 100 gallons finished solution*) by ground equipment delivering 40 gallons per hour at a vehicle speed of 5 miles per hour to treat a swath width of 300-400 feet.

Prokil Malathion ULV

*There is a great variation in the chemical composition of fuel oils which may be used as thermal fog solvents. These differences may cause sludge and/or affect the solubility of Prokil Malathion ULV.

Nonthermal Aerosols

Over a 300-foot swath can be produced using the nonthermal ultra low volume aerosol method with Prokil Malathion ULV. Use the following rates at the indicated vehicle speeds:

| Vehicle Speed Miles per Hour | Flow Rate of Prokil Malathion ULV Fluid Ounces per Minute | Maximum Flow Rate per Hour |
|---------------------------------|--------------------------------------------------------------|-------------------------------|
| 5 | 1.0 to 2.1 fluid ounces | 1 gallon |
| 10 | 2.0 to 4.3 fluid ounces | 2 gallons |
| 15 | 3.0 to 6.45 fluid ounces | 3 gallons |
| 20 | 4.0 to 8.6 fluid ounces | 4 gallons |

For control of adult stable fly in populated and rural areas with nonthermal aerosols of this product using the ultra low volume method, use the following flow rates at the indicated speeds:

| Vehicle Speed Miles per Hour | Flow Rate of Prokil Malathion ULV Fluid Ounces per Minute | Maximum Flow Rate per Hour |
|---------------------------------|--------------------------------------------------------------|-------------------------------|
| 5 | 2.1 fluid ounces | 1 gallon |
| 10 | 4.3 fluid ounces | 2 gallons |

DROPLET SIZE

1. The Mass Median Diameter (MMD) of the droplets should not exceed 17 microns. The MMD is the drop diameter which divides the spray volume into two equal parts; i.e., 50% of the volume is in the drop sized below the MMD and 50% is above the MMD.
2. Spray droplets should not exceed 32 microns in size. Three percent of the spray droplets (6 droplets out of 200) can exceed 32 microns providing the MMD does not exceed 17 microns and no droplets exceed a maximum of 48 microns. Larger droplets, when transported by natural air currents, impinge more readily on objects in their pathway and will permanently damage automobile-type paints.
3. More than one-half of the total spray mass must consist of droplets in the 6 to 18 micron range to achieve adequate dispersal of insecticide over a 300-foot swath.
4. A minimum of two-thirds, preferably four-fifths of the total spray mass must consist of droplets not exceeding 24 microns in range.

OPERATING EQUIPMENT

Each Nonthermal Aerosol Generator used for dispersal of ~~Pakul Malathion~~ ULV to control adult mosquitoes must have minimum capability of producing the droplet spectrum described under DROPLET SIZE. The initial determination of droplet size is made after the unit is installed in a vehicle and prior to its use in mosquito control operations. The unit should be rechecked as frequently as necessary to insure that proper droplet size is maintained for each operation. Determination of droplet size every two months is usually sufficient if the unit has been maintained in good operating condition. Equipment manufacturer's instructions setting forth cleaning and maintenance of the unit must be followed. The unit must be inspected before each operation to correct any leaks or obstructions in the spray system; to detect whether the nozzle, hoses, or other parts are worn and need replacement; to insure that the flow meter is properly calibrated; and to determine that the pressure recommended by the manufacturer is being maintained.

Flow Rate- must be regulated by accurate flow meter.

- not greater than 1 gallon per hour at 5 mph, 2 gallons per hour at 10 mph, 3 gallons per hour at 15 mph or 4 gallons per hour at 20 mph.

Nozzle Direction- rear of the vehicle.

- upward at an angle of 45° or more.

Vehicle Speed- not greater than 20 miles per hour.

- shut off spray equipment when vehicle is stopped.

IMPORTANT-Spray droplets of undiluted ^{Pakul Malathion} ~~CYTHON~~ ULV will permanently damage automobile paint unless all the conditions described and recommended in this label are met.

Directions for Determining
the Droplet Size of
Prokil Malathion ULV Nonthermal Aerosols

1. Preparation of Slides with DRI-FILM

Prokil Malathion ULV droplet sizes are determined by depositing a sample of the aerosol on a coated glass slide and measuring the droplets under a high-power microscope. Ordinary 3" x 1" glass slides must be coated with silicone (General Electric SC-87 DRI-FILM) prior to sampling to prevent excessive spreading or coalescence of the droplets. The slides are dipped into a 10 percent solution of DRI-FILM in toluene, drained and dried at about 200°F for 30 minutes, after which they are dipped in acetone, allowed to dry and stored in a tight slide box. Coating solution must be freshly prepared. Do not store coating solution because it will deteriorate. Slides are lightly polished with a soft tissue before using to remove any foreign particles.

2. Deposition of Prokil^{malathion} ULV Droplets on Slides

Droplets should be collected under ideal operating conditions to insure representative sampling in the aerosol. A sample of the Prokil Malathion ULV aerosol is deposited on a slide by waving the slide as rapidly as possible perpendicular through the aerosol cloud at a distance of 25 feet from the point of discharge. The slide velocity may be increased by attaching it to a 3 or 4 foot stick by means of a spring paper clip. At least two slides should be exposed to insure an adequate sample. Store slides in a tight slide box for transfer to a location where measurements can be made. Avoid excessive heat during transit and store in a cool place until measurements can be made.

Although label specifications require the aerosol nozzle to be angled upward at 45° or more during operation, it is more convenient to position the nozzle parallel to the ground for droplet sampling. If this is not possible it will be necessary to be positioned at a sufficient height to obtain a representative sample of the aerosol.

Figure 1.

Percentage of the total volume of aerosol samples below each stated droplet size (from Table 1). The Mass Median Diameter is determined from the 50 percent point on the line. The Mass Median Diameter (MMD) is 9.2 divisions time 1.75 - 16.1 microns.

(graph here)

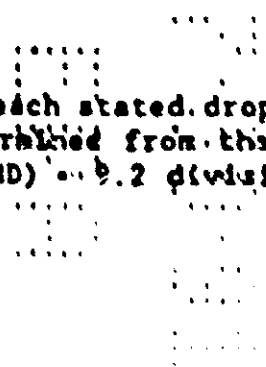
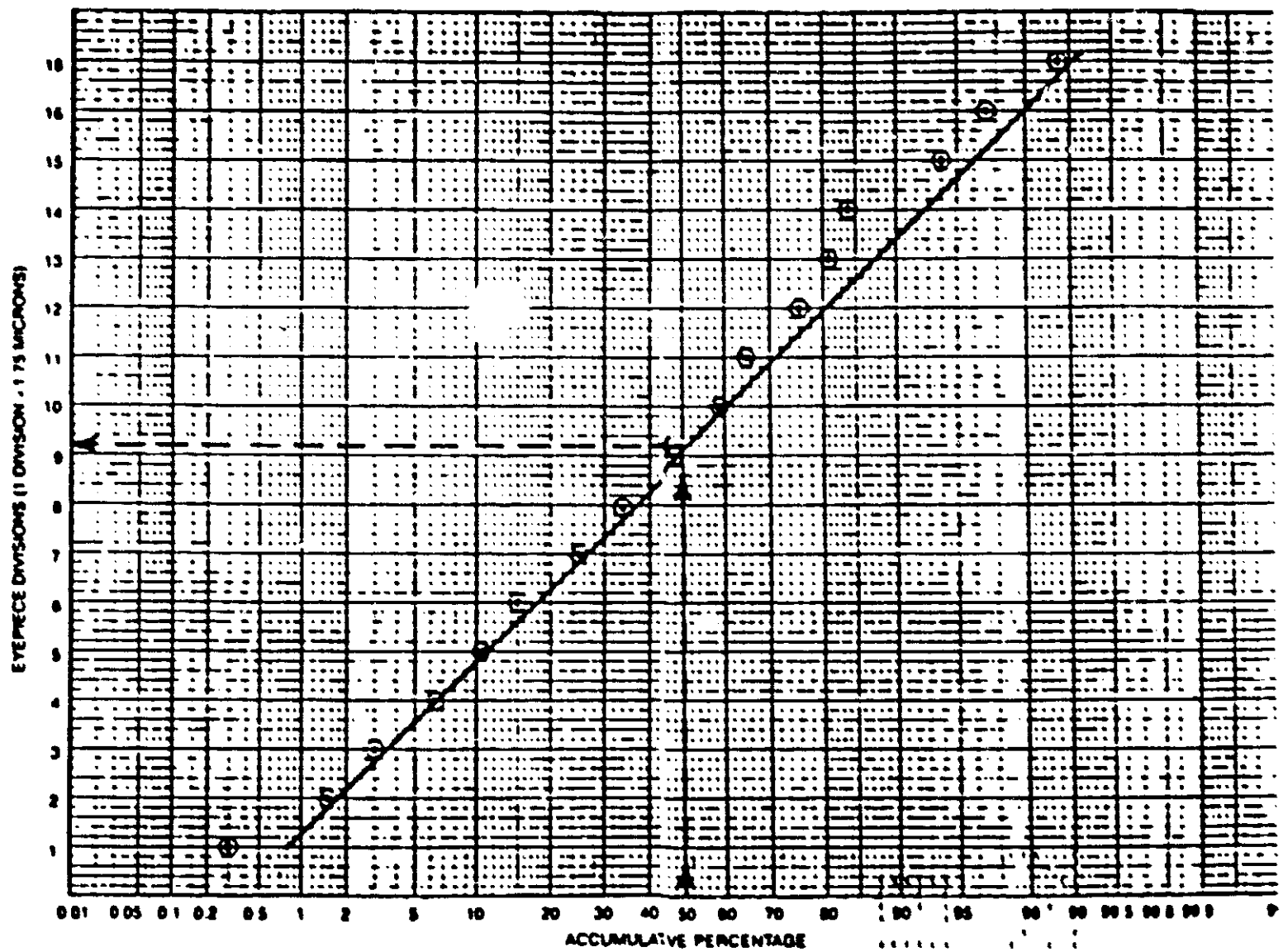


Figure 1.

Percentages of the total volume of aerosol samples below each stated droplet size (from Table 1). The Mass Median Diameter is determined from the 50 percent point on the line. The Mass Median Diameter (MMD) = 9.2 divisions time 1.75 = 16.1 microns.



Prokil Malathion
3. Determination of ~~EXTENSION~~ ULV Droplet Sizes

A microscope with mechanical stage and an eyepiece micrometer are used to determine the size of the individual aerosol droplets. Prior to taking measurements, the divisions of the eyepiece micrometer must be calibrated into microns by means of a stage micrometer. In the example represented in Table 1, droplets were measured at 400x magnification. At that magnification each division of the eyepiece was calibrated to equal 3.5 microns.

At least 200 droplets should be measured. Usually this is easily accomplished on one slide. An accurate method is to measure all droplets that pass through the micrometer scale as the slide is moved from one edge to the other by using the mechanical stage. Measurements should not be taken along the margins of the slide. It is more convenient to measure in terms of the divisions of the eyepiece micrometer and then convert these divisions into microns.

The measurements converted into microns must then be corrected for the amount of spread that occurred on the slide. The ~~EXTENSION~~ ULV spread factor for silicon-coated slides is 0.5. Therefore, in Table 1 each division of the eyepiece actually equals 1.75 microns (3.5 microns times the 0.5 spread factor). *Prokil Malathion*

The spread factor for TEFLON-coated slides is 0.69. The following procedure as given for silicone-coated slides, would be the same for TEFLON-coated slides once the value for each eyepiece division has been determined.

The measurements are tabulated and processed as in Table 1. The Maximum Diameter is calculated by converting the diameter of the largest droplet measured into microns. In Table 1 the largest droplet measured had a diameter of 19 eyepiece divisions. Therefore, the Maximum Diameter is 33.3 microns (19 x 1.75=33.3).

To determine the Mass Median Diameter (MMD), the accumulative percentages from the last column in Table 1 are plotted against the eyepiece divisions (D) on semi-logarithmic paper as in Figure 1. Directly across from the 50 percent point on the line is the median droplet size in eyepiece divisions which must be converted to microns. In Figure 1, 9.2 eyepiece divisions times the conversion factor of 1.75 equals a Mass Median Diameter of 16.1 microns.

AGRICULTURAL USES

OPERATING INSTRUCTIONS

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 sprays have dried. 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.

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. 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: CAUTION. Area treated with malathion (date of application). Do not enter without appropriate protective clothing.

Profil Malathion (ULV) is used undiluted in specially designed aircraft or ground equipment capable of applying ultra low volumes for control of the insects indicated. Aerial applications are most effective when made at a boom height of 5 feet and a swath width of 50 feet. Apply only when weather conditions are favorable. Wind and rising air currents may cause undesirable spray drift and reduce insect control.

Mist blowers and boom sprayers utilizing a controlled air flow to facilitate particle size and spray deposition may be used at a vehicle speed of 4 to 10 mph.

Mist blowers with a pump capable of producing up to 40 psi and blower speeds of 2600 rpm are satisfactory. Use flat fan nozzles, 8001 to 8002, place 30° into air blast or rotary atomizers into the air blast that produce an efficient spray particle with a mass median diameter of 40 to 100 microns. Swath widths should not exceed 30 feet. Apply only when weather conditions are favorable. Wind and rising air currents may cause undesirable spray drift and reduce insect control.

Boom sprayers with a filtered rotary air compressor, either PTO or gas engine driven or an air pump capable of producing at least 12 psi are satisfactory. Use air pressure on chemical tanks and an accurate metering valve to assure a calibrated flow of the pesticide. Air should be regulated with relief valve and gauge for proper air and liquid mixture. Pneumatic-type spray nozzles, as suggested by equipment manufacturer, should be used for spray particles with mass median diameter of 30 to 100 microns. Apply only when weather conditions are favorable. Wind and rising air currents may cause undesirable spray drift and reduce insect control.

Repeat applications should be made as necessary unless otherwise specified.

Prakil Malathion

IMPORTANT-Undiluted spray droplets of **SPINAZON ULV** WILL PERMANENTLY damage automobile paint. If accidental exposure does occur, the vehicle should be washed immediately.

Consult your state experiment station or state extension service for proper timing of sprays.

This product is highly toxic to bees exposed to direct treatment or residues on crops. Protective information may be obtained from your Cooperative Agricultural Extension Service.

IMPORTANT

- Instructions when contents are to be used in ultra low volume spraying over cities, towns and other populated areas.
 Spray droplets of this product undiluted will permanently damage automobile paint unless all of the following conditions are met.
1. Aircraft is operated at 150 mph or more.
 2. There are no leaks in the ultra low volume spray system.
 3. Nozzles are placed on the beam at a 45° angle down and into the wind.
 4. Diaphragm check valves are used on all nozzles to insure positive cutoff of the spray.
 5. Dosage of this product does not exceed 3.3 fluid ounces per acre (40 acres per gallon) over cities, towns, and other populated areas.
 6. The spray system produces droplets of this product in the 30 to 60 micron median diameter (MMD) micron range, with not more than 10% of the droplets exceeding 100 microns, as determined by readings made from microscope slides coated with Orifilm.

| Crop | Pests Controlled | Fluid Ounces Per Acre | Days to Harvest or Grazing & Comments |
|--------------------------------------------------------------------|---------------------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------|
| Alfalfa | Alfalfa Caterpillar | 8 | 0 day, Apply when larvae are small. |
| | Western Yellow Striped Armyworm | 12 | 5 days, Apply when larvae are large or when foliage is dense. |
| | Alfalfa Weevil Larvae | 16 | 5 days, Apply when day temperatures are expected to exceed 65°F. and when 50-75% of leaves show feeding damage. |
| | Beet Armyworm | 8 | 0 day, Apply when larvae are small. |
| | | 16 | 5 days, Apply when larvae are large or when foliage is dense. |
| | Grasshoppers | 8 | 0 day. |
| Do not apply to alfalfa in bloom. Do not apply to seed alfalfa. | | | |
| Beans (lima, green, snap, Navy, red kidney, wax, dry, blackeye) | Mexican Bean Beetle | 8 | 1 day |
| | Leafhoppers | | |
| | Green Cloverworm | | |
| | Japanese Beetle | | |
| | Lygus Bug | | |
| Blueberries | Blueberry Maggot | 10 | 0 day |

| | | | |
|---------------------------------------------|-------------------------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Cherries | Cherry Fruit Fly | 12-16 | 1 day. Apply by aircraft only. Use higher rate when foliage is heavy or infestation is severe. Make first application as soon as flies appear. |
| Clover, Pasture and Range Grass, Grass Hay. | Blackgrass Bugs Grasshoppers | 8-12 | 0 day. Do not apply to apply to clover in bloom. |
| Corn | Adult Corn Rootworm | 4 | 5 days. |
| | Grasshoppers | 8 | 5 days. |
| | Cereal Leaf Beetle | 4-8 | 5 days. |
| Cotton+ | Aphids (Green Peach and Cotton) | 14-16 | |
| | Boll Weevil | 8-16 | Early to Late season. |
| | Grasshoppers | 8 | |
| | Fleahoppers Leafhoppers | 4-8 | |
| | Lygus Bugs including Tarnished Plant Bugs | 8-12 | Moderate Populations |
| | | 16 | Very heavy or migrating Populations. |
| | Thrips | 4-8 | |
| Grain Sorghum | Grasshoppers | 8 | 7 days |
| | Sorghum Midge | 8-12 | 7 days. Apply during the bloom stage. |
| Grasses | Blackgrass Bugs Grasshoppers | 8-12 | 0 day |
| | Cereal Leaf Beetle | 4-8 | |

+For use on cotton: CYTHION ULV can be used alone as a ULV concentrate spray or diluted in once-refined cottonseed or vegetable oil sufficient to make at least one quart of finished spray per acre.

| | | | |
|---------------------------------------------|--------------------|-----|---------------------------------------------------------------------------------------------------|
| Rice | Grasshoppers | 8 | 7 days |
| Rice-Grain Form (Louisiana, Texas) | Rice Stink Bug | 8 | 7 days. Apply by aircraft only. Apply during early milk and dough stage of growing rice. |
| Rye | Grasshoppers | 8 | 7 days. |
| Wheat | Cereal Leaf Beetle | 4-8 | 7 days. |
| Oats | Grasshoppers | 8 | 7 days. |
| Barley | | | |

IMPORTANT

Consult your state experiment station or state extension service for proper timing of sprays.

These products are highly toxic to bees exposed to direct treatment of residues on crops. Protective information may be obtained from your Cooperative Agricultural Extension Service.

All applicable directions, restrictions and precautions on the EPA registered labels are to be followed.

Operator should inspect and calibrate equipment to assure that the proper amounts of pesticide are being applied, and that uniform coverage is obtained.

This label must be in the possession of the user at time of pesticide application.

Also for use in accordance with the recommendations and instructions issued by the United State Department of Agriculture for quarantine programs. To be used only by or under the direction of Federal/State personnel for quarantine treatments.

NOTICE ON CONDITIONS OF SALE

Our recommendations for use of this product are based upon tests believed to be reliable. The use of this product being beyond the control of the manufacturer, no guarantee, expressed or implied, is made as to the effects of such or the results to be obtained if not used in accordance with directions or established safe practices. The buyer must assume all responsibility, including injury or damage, resulting from its misuse or such, or in combination with other materials.