CLEAN CROP®

MALATHION ULV-91

EPA REG. NO. 34704-203

CAUTION

Keep Out of Reach of Children.

IMPORTANT
Before Using.
STOP
Read Directions in This Leaflet

® CLEAN CROP is the Registered T M of United Agri Products Inc

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Under the Federal [illegible] Fungicide, and Rodenticide Act, as amended, for the pesticide registered under EPA Reg. No. 34704-203

INGREDIENTS

Active Ingredient.	
Malathion**	91.0%
Inert Ingredients	9.0%

**O,O-dimethyl phosphorodithioate of diethyl mercaptosuccinate

(One gallon contains 9.33 pounds of malathion)

Precaucion

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

(TO THE USER: If you cannot read English, do not use this product until the label has been fully explained to you.)

Before using, read the directions contained in this leaflet 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

KEEP OUT OF REACH OF CHILDREN

CAUTION!

HARMFUL BY SWALLOWING, INHALATION OR SKIN CONTACT

Undiluted spray droplets of MALATHION ULV 91 concentrate insecticide will permanently damage automobile paint unless these specific instructions for ground and aerial application are followed

Avoid Breathing Spray Mist
Avoid Contact With Skin
Wash Thoroughly After Handling
Change Contaminated Clothing
Do Not Contaminate Food Or Feed Products

This product is toxic to fish. Avoid direct applications to lakes, streams, ponds, tidal marshes and estuaries. Do not apply where runoff is likely to occur. Do not apply when weather conditions favor drift from areas treated. Do not contaminate water by cleaning of equipment, or disposal of wastes. Shrimp and crab may be killed at application rates recommended on this label. Do not apply where these are important resources. Apply this product only as specified on this label.

DISCLAIMER

This label instructions for the use of this product reflect the opinion of expects based on field use and tests. The directions are believed to be reliable and should be followed carefully. However, it is impossible to eliminate all risks inherently associated with use of this product. Crop injury, automobile paint damage, ineffectiveness or other

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unintended consequences may result because of such factors as weather conditions, presence of other materials, or the use or application of the product contrary to label instructions, all of which are beyond the control of Platte Chemical Co., Inc. All such risks shall be assumed by the user.

Platte Chemical Co., Inc warrants only that the material contained herein conforms to the chemical description on the label and is reasonably fit for the use therein described when used in accordance with the directions for use, subject to the risks referred to above.

Any damages arising from a breach of this warranty shall be limited to direct damages and shall not include consequential commercial damages such as loss of profits or sales or any other special or indirect damages.

Platte Chemical Co., Inc. makes no other express or implied warranty, including any other express or implied warranty of FITNESS or of MERCHANTABILITY.

STORAGE AND DISPOSAL

See container label for storage and disposal instructions.

DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling

IMPORTANT NOTICE

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

MOSQUITO CONTROL IN POPULATED AND RURAL AREAS

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 MALATHION ULV-91 per acre. Aerial spraying should not be attempted when the wind is at or above 10 mph or temperatures are above 82°F

IMPORTANT — Undiluted spray droplets of MALATHION ULV-91 will permanently damage vehicle paint finishes unless the aircraft used for the ultra low volume application meets all of the specifications listed below

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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 cut-off of the spray
5 Dosage of MALATHION ULV-91 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-FILM* or TEFLON®

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 MALATHION ULV-91 droplets on mounting brackets, feed lines, fittings, etc , or any part of the aircraft.

* Trademark of General Electric Company
® Registered Trademark of E I duPont de Nemours & Co , Inc.

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Operating Procedures

1. MALATHION ULV-91 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 MALATHION ULV-91.

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

4. Screen 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 MALATHION ULV-91 does not exceed 3 fluid ounces per acre.

7. The spray system must produce droplets of MALATHION ULV-91 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

For control of adult mosquitoes with thermal aerosols or fogs, apply MALATHION ULV-91 at the rate of 6-8 oz actual/gallon (3.9-5.2 gallons MALATHION ULV-91 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.

*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 the MALATHION ULV-91. For more complete details on tests for sludge formation and solubility in thermal fog solutions, write Platte Chemical Co. Inc. 150 S. Main St. Fremont, Nebraska 68025.

Nonthermal Aerosols

Over a 300-foot swath can be produced using the non-thermal ultra low volume aerosol method with MALATHION ULV-91. Use the following rates at the indicated vehicle speeds.

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Vehicle Speed Miles per Hour	Flow Rate of MALATHION 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

For control of adult stable fly in populated and rural areas with nonthermal aerosols of MALATHION ULV-91 using the ultra low volume method, use the following flow rates at the indicated vehicle speeds:

Vehicle Speed Miles per Hour	Flow Rate of MALATHION 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

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 sizes 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 achive 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 MALATHION ULV-91 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

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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
or 2 gallons per hour at 10 mph

Nozzle Direction—rear of the vehicle.
—upward at an angle of 45° or more

Vehicle Speed—not greater than 10 miles per hour
—shut off spray equipment when vehicle is stopped

IMPORTANT—Spray droplets of undiluted MALATHION ULV-91 will permanently damage automobile paint unless all the conditions described and recommended in this leaflet are met

Direction for Determining the droplet size of MALATHION ULV-91 nonthermal aerosols

1. Preparation of Slides with DRI-FILM

MALATHION ULV-91 droplet sizes are determined by depositing a sample of the aerosol on a coated glass slide and measuring the droplets under a high-powered 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.

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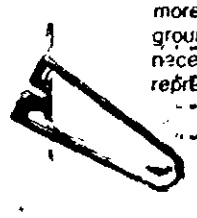
2. Deposition of MALATHION ULV-91 Droplets on Slides

Droplets should be collected under ideal operating conditions to insure representative sampling of droplets in the aerosol A sample of the MALATHION ULV-91 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 light 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



3. Determination of MALATHION ULV-91 Droplet Sizes

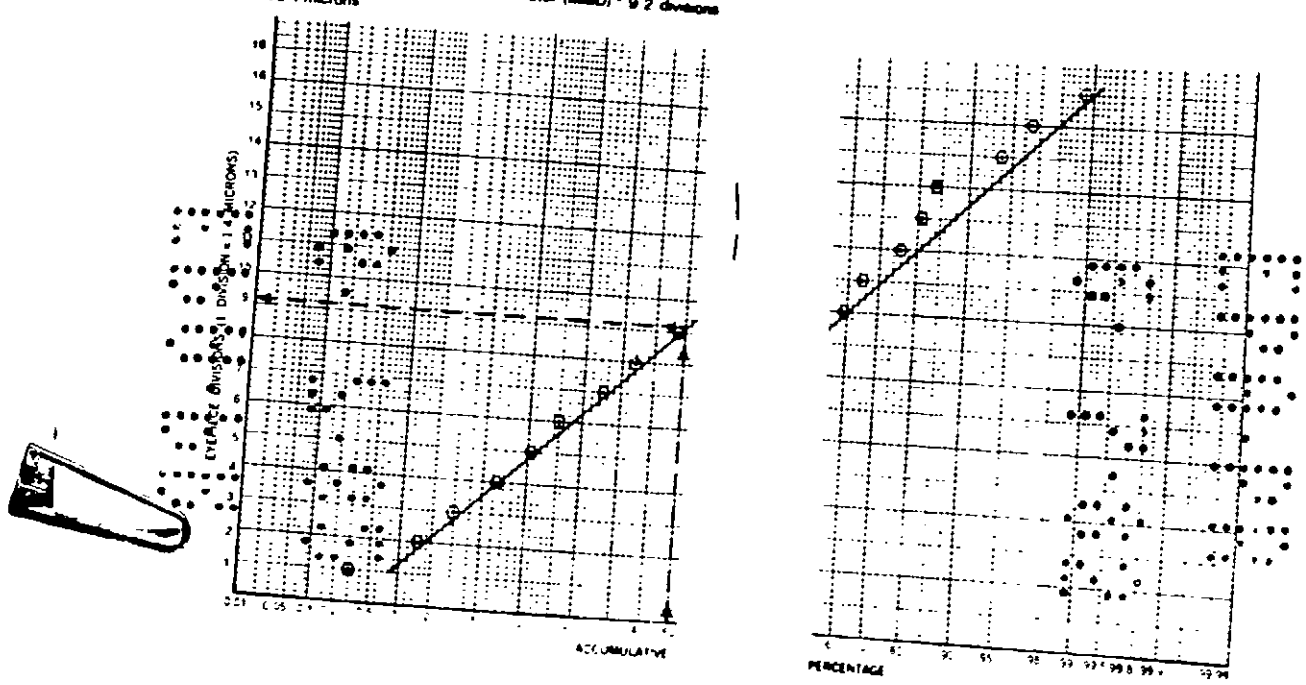
A microscope with mechanical stage and an eyepiece micrometer are used to determine the size of the individual aerosol droplets Prior to taking measurements, the divisions of the eyepiece micrometer must be calibrated into microns by means of a stage micrometer In the example represented in Table 1, 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 MALATHION ULV-91 spread factor for silicone-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)

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) - 9.2 divisions times 1.75 = 16.1 microns



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The spread factor for TEFLON-coated slides is 0 69 The following procedure is 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 equals 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 a 2 eyepiece divisions times the conversion factor of 1 75 equals a Mass Median Diameter of 16.1 microns.

Table 1—Representative Count of MALATHION ULV-91 Aerosol Droplets Impinged on Microscope Slides Coated with DRI-FILM

Eyepiece Divisions (D*)	Number of Droplets (N)	DxN	% Of Total DxN Σ (DxN)	Accumulative Percentages
1	5	5	0 31	0.31
2	10	20	1 22	1 53
3	9	27	1 65	3.18
4	12	48	2 93	6 11
5	15	75	4 58	10.69
6	12	72	4 40	15 09
7	25	175	10 70	25 79
8	14	112	6 85	32 64
9	28	252	15 40	48 04
10	19	190	11 61	59 65
11	14	154	9 41	69 06
12	10	120	7 33	76 39
13	6	78	4.77	81 16
14	4	56	3 42	84 58
15	11	165	10 09	94 67
16	2	32	1 96	96.63
18	2	36	2 20	98 83
19	1	19	1 16	99 99
Total	199	1636		

*Measurements were taken at 400X magnification Each eyepiece division equals 1 75 microns (3 5 microns times the 0 5 spread factor)

AGRICULTURAL USES

OPERATING INSTRUCTIONS

MALATHION ULV-91 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 the 50 feet. Do not make application when winds exceed 5 mph.

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, and application should not be made when winds exceed 5 mph.

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 Applications should not be made when winds exceed 5 mph

Repeat applications should be made as necessary unless otherwise specified.

IMPORTANT—Undiluted spray droplets of MALATHION ULV-91 will permanently damage automobile paint If accidental exposure does occur, the vehicle should be washed immediately

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

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

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Crop	Pests Controlled	Fluid Ounces per Acre	Days to Harvest or Grazing & Comments
Alfalfa	Alfalfa caterpillar Western yellow stripped army worm	8	0 day Apply when larvae are small
	Alfalfa weevil larvae	12	5 days Apply when larvae are large or when foliage is dense
		16	5 days. Apply when day temperatures are expected to exceed 65° F. and when 50-75% of leaves show feeding damage
	Beet army worm	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 Leafhoppers Green Cloverworm Japanese Beetle Lygus Bug	8	1 day
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

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Crop	Pests Controlled	Fluid Ounces Per Acre	Days to Harvest or Grazing & Comments
Cereal crops (barley, corn, oats, wheat) and grasses	Cereal leaf beetle	4-8	Barley, oats, wheat 7 days Corn 5 days, Grasses 0 day
Clover, Pasture and Range Grass, Grass, Grass Hay, Non-agricultural Land (wastelands, roadsides)	Grasshoppers	8	0 day Do not apply to clover in bloom.
Corn	Adult Corn Rootworm	4	5 days
Cotton	Early Season Insects Thrips Fleahoppers Leafhoppers	4-8	0 day
	Boll Weevil	8-12	Early to midseason
	Grasshoppers	16	Late season
	Lygus Bugs	8 8-12 16	Very heavy migrating populations.
Grain Crops (barley, corn, oats, rye, rice, grain sorghum and wheat)	Grasshoppers	8	7 days, except corn Corn 5 days
Grain Sorghum	Sorghum Midge	8-12	7 days Apply during the bloom stage

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Crop	Pests Controlled	Fluid Ounces per Acre	Days to Harvest or Grazing & Comments
Peas (Northwest)	Pea Weevil	8	14 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.
Safflower	Grasshoppers Lygus Bugs	8	3 days of harvesting seeds.
Soybeans	Mexican Bean Beetle Grasshoppers Japanese Beetle Green Cloverworm	8	7 days
Sugar Beets	Grasshoppers Sugar Beet Root Maggot Adults	8	0 day 7 days If tops are to be used for food or feed
Nonagricultural Lands	Beet Leafhopper (on wild host plants)	8	0 day
Beef Cattle-Feed Lots and Holding Pens	Adult Flies and Mosquitoes	6-8	0 day

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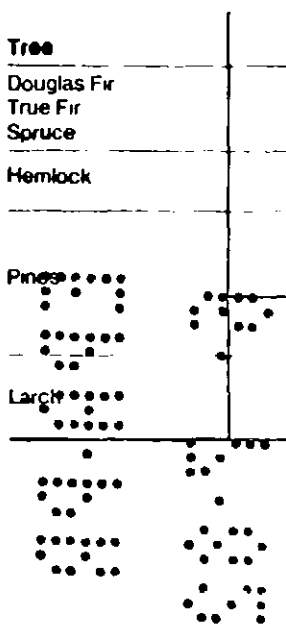
OTHER AGRICULTURAL USES:

Alfalfa, Clover, Pasture and Range Grass, Grass and Grass Hay, Grain Crops, Beans, Rice, Tomatoes and Nonagricultural Lands (wasteland) Adult mosquitoes and flies—Apply MALATHION ULV-91 at the rate of 2 to 4 fluid ounces for control of adult mosquitoes and at 6 to 8 fluid ounces per acre for control of adult flies and mosquitoes Repeat applications as necessary On alfalfa clover pasture and range grass, grass and grass hay, may be applied on day of harvest or grazing Do not apply to alfalfa and clover in bloom Do not use on seed alfalfa On grain crops, make no application within 7 days of harvest or forage use, on corn, within 5 days of harvest or forage, on rice, within 7 days of harvest; on beans and tomatoes, within 1 day of harvest

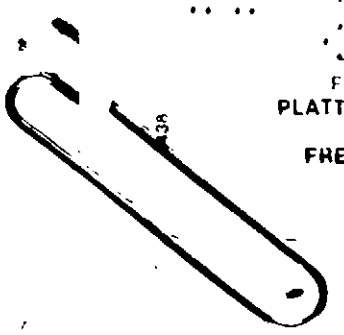
FOREST INSECTS

Apply with aircraft equipped for ultra low volume application Make application when air is calm and temperature is below 68°F Do not allow spray to contact ferns, hickory and maples as injury may result Do not spray on elms under extreme heat, drought and disease conditions

Tree	Pests Controlled	Fluid Ounces per Acre	Directions
Douglas Fir True Fir Spruce	Spruce Budworm	13	Apply when highest percentage of larvae are in the fifth instar
Hemlock	Hemlock Looper	8	Apply when most larvae are in the third and fourth instar
Pines	European Pine Sawfly	10	Apply when larvae are in the first or second instar or before they reach ½ inch in length
	Saratoga Spittlebug		Apply when 95% of the population has become adult
Larch	Larch Casebearer	8	Apply in spring as soon as larvae break hibernation and begin feeding on new foliage



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



FORMULATED FOR
PLATTE CHEMICAL CO., INC.
150 S. MAIN ST.
FREMONT, NEBR. 68025

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