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

MAR 3 - 1994

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

P. Leanne Pruett
CHEMINOVA
1700 ROUTE 23, SUITE 210
WAYNE, NJ 07034

Subject: Label Amendment Submission of 09/18/93 in Response to PR Notice 93-7
EPA Reg. No. 4787-9 → 8
FYFANON ULV

Dear Registrant:

The labeling cited above and submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, is accepted subject to the comments reflected on the enclosed sheet. A copy of your proposed labeling stamped "ACCEPTED WITH COMMENTS" is enclosed.

WHAT THIS ACCEPTANCE MEANS:

Based on your certification, the Agency has accepted the labeling changes that are necessary to comply with the Worker Protection Standard (WPS) labeling requirements of 40 CFR part 156, subpart K, described in PR Notices 93-7 and 93-11. Any other labeling changes submitted in connection with this amendment application but not directly related to compliance with the WPS have not been reviewed or accepted by the Agency. If you wish to make such changes, you must submit a separate amendment application proposing them. If your product is currently suspended, the acceptance of this labeling amendment does not affect the suspension in any way.

WHAT YOU NEED TO DO NEXT:

By the next label printing make all the specified changes to your labeling. Send to EPA one (1) copy of the final printed labeling:

- BEFORE selling or distributing any product bearing the final printed labeling AND
- WITHIN one year from date of this acceptance.

Submit the final printed labeling via the U.S. Postal Service to:

Document Processing Desk (FIN-LABEL)
Office of Pesticide Programs (7505C)
U.S. Environmental Protection Agency
401 M Street, SW
Washington, D.C. 20460-0001

Hand or courier deliveries of final printed labeling may be made to:

Document Processing Desk (FIN-LABEL)
Office of Pesticide Programs
Room 266A, Crystal Mall 2
1921 Jefferson Davis Highway
Arlington, VA 22202

Sincerely,

Jim Tompkins, Deputy Chief
Registration Support Branch
Registration Division (7505W)

Attachment

FYFANON ULV

ULTRA LOW VOLUME CONCENTRATE INSECTICIDE

BEFORE USING THIS PESTICIDE - STOP - READ THE LABEL

ACTIVE INGREDIENT:	
MALATHION*	95.0%
Inert Ingredients	5.0%
TOTAL	100.0%

* O,O-dimethyl phosphorodithioate of diethyl mercaptosuccinate
(1 gallon contains 9.79 pounds of malathion)

ACCEPTED
with COMMENTS
In EPA Letter Dated
MAR 3 1994
Under the Federal Insecticide, Fungicide, and Rodenticide Act as amended, for the pesticide registered under EPA Reg. No. 4787-8

KEEP OUT OF REACH OF CHILDREN

CAUTION

HARMFUL BY SWALLOWING, INHALATION OR SKIN CONTACT

Avoid breathing spray mist * Avoid contact with skin * ~~Wash thoroughly after Handling~~ ~~Change Contaminated clothing~~ * Do not contaminate food or feed products

STATEMENT OF PRACTICAL TREATMENT

This product is an organophosphate and is a cholinesterase inhibitor.

IF SWALLOWED: Call a physician or poison control center immediately. Induce vomiting by giving 1 or 2 glasses of water and touching back of throat with finger or blunt object. Do not induce vomiting or give anything by mouth to an unconscious person.
IF INHALED: Remove victim to fresh air immediately.
IF ON SKIN: ~~Remove contaminated clothing and~~ wash affected areas with soap and water.
IF IN EYES: Flush with water for at least 15 minutes and get medical attention.
NOTE TO PHYSICIAN: This material is a cholinesterase inhibitor. Treat symptomatically. Atropine is an antidote.

See side panels for additional precautionary statements.

EPA Reg. No. 4787-8 EPA Est. No. 4787-DN-1

A/S CHEMINOVA - Lemvig, Denmark
Phone: 07 83 41 00 - Telex: 66514 - Telecopier 07 83 45 55

NET. WEIGHT: 250 Kilos

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS (& DOMESTIC ANIMALS)

Harmful by swallowing, inhalation or skin contact. Avoid breathing spray mist. Avoid contact with skin. Wash thoroughly after handling, change contaminated clothing. Do not contaminate food or feed products.

PERSONAL PROTECTIVE EQUIPMENT: Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for category F on an EPA chemical-resistance category selection chart.

Applicators and other handlers must wear:

- Long sleeved shirt and long pants
- Chemical-resistant gloves, such as Barrier Laminate, or Butyl Rubber, or Nitrile Rubber, or Viton.
- Shoes plus socks

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

ENGINEERING CONTROLS STATEMENTS: When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d) (4 - 6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

ENVIRONMENTAL HAZARDS

This product is toxic to fish. Keep out of lakes, streams, ponds, tidal marshes and estuaries. Do not apply where runoff is likely to occur. Do not apply when weather conditions favor drift form 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. This pesticide is highly toxic to bees exposed to direct treatment or to residues remaining on the treated area. Do not apply when bees are actively visiting the crop, cover crop, or weeds blooming in the treated area. Apply this product only as specified on this label.

PHYSICAL OR CHEMICAL HAZARDS

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.

STORAGE AND DISPOSAL

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

STORAGE: FYFANON ULV should be stored at temperatures not exceeding 25°C (77°F). It should never be heated above 55°C (131°F), and also local heating above this temperature should be avoided.

PESTICIDE DISPOSAL: Pesticide, spray mixture, or rinse water that cannot be used according to label instructions may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL: Metal Containers: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other approved state and local procedures.

DISCLAIMER

The label instructions for the use of this product reflect the opinion of experts 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 the use of this product. Crop injury, automobile paint damage, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use or application , all of which are beyond the control of CHEMINOVA. All such risks shall be assumed by the user.

CHEMINOVA 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 values or any other special or indirect damages.

CHEMINOVA makes no other express or implied warranty including any other express or implied warranty of FITNESS ore of MERCHANTABILITY.

The sale of this product does not include a license under any patent owned by CHEMINOVA.

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.

AGRICULTURAL USES

Do not use this product for any uses other than those specified on this label.

MANUFACTURING USES

FYFANON ULV may be used for the preparation of malathion insecticides. Before using for this purpose, manufacturers should consult CHEMINOVA for manufacturing and safe handling instructions.

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, nurseries, and greenhouses, 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). The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

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.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours.

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, such as Barrier Laminate, or Butyl Rubber, or Nitrile Rubber, or Viton.
- Shoes plus socks

FYFANON 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 55 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, placed 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 200 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.

IMPORTANT

Undiluted spray droplets of FYFANON ULV will permanently damage automobile paint. Cars should not be sprayed. If accidental exposure does occur, the car 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.

CROP	PESTS CONTROLLED	FLUID OUNCES PER ACRE	DAYS TO HARVEST or GRAZING and 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 50-70% 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 days.
	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.
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, Nonagricultural Land (wastelands, roadsides)	Grasshoppers	8-12	0 day. Do not apply to clover in bloom.
Corn	Adult Corn Rootworm	4	5 days.
Cotton	Early Season Insects Trips, Fleahoppers Leafhoppers	4-8	0 day.
	Boll Weevil	8-16	Early to midseason 0 day.
		16	Late season.
	Grasshoppers	8	
	Lygus Bugs	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.

CROP	PESTS CONTROLLED	FLUID OUNCES PER ACRE	INTERVAL BETWEEN LAST APPLICATION AND HARVEST
Grain Sorghum	Sorghum Midge	8-12	7 days. Apply during the bloom stage.
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 of harvest or forage use.
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 Lot, and Holding Pens	Adult flies and Mosquitoes	6-8	0 day.

OTHER AGRICULTURAL USES

Alfalfa, Clover, Pasture and Range Grass, Grass and Grass Hay, Grain Crops, Beans, Rice, Tomatoes and Nonagricultural Lands (wastelands): Adult mosquitoes and flies - Apply FYFANON ULV 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 third and fourth instar.
Pines	European Pine Sawfly	10	Apply when larvae are in the first or second instar or before they reach ½ in lenght.
	Saratoga Spittlebug	10	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.

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 FYFANON ULV 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 FYFANON ULV 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 cut-off of the spray.
5. Dosage of FYFANON ULV 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 1% of the droplets exceeding 100 microns, as determined by readings made from microscope slides coated with DRI-FILM* OR TEFLON**

* - Trademark of General Electric Company

** - Registered Trademark of E. I, duPont de Nemours & Do., 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 nozzle 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 FYFANON ULV droplets on mounting brackets, feed lines, fittings, etc., or any part of the aircraft.

OPERATING PROCEDURES

6. FYFANON 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.
7. Entire system, including tank, pump, nozzle and feed lines, to be used only for application of FYFANON ULV.
8. Entire system must be inspected daily to insure that there are no leaks.
9. Sleeve must be removed and cleaned immediately after each use by washing with hot water and blowing dry from outside in with clean air.
10. Rotating nozzle must be turned on and operating before turning on pump. For shut off, pump must be shut off and lines cleaned prior to stopping nozzle rotation.
11. Dosage of FYFANON ULV does not exceed 3 fluid ounces per acre.
12. The spray system must produce droplets of FYFANON 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

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

* 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 FYFANON ULV.

Nonthermal Aerosols

Adult Mosquito Control - For control of adult mosquitoes over a 300-foot swath with nonthermal aerosols of FYFANON ULV using the following rates at the indicated vehicle speeds:

Vehicle Speed Rate Per Hour	Flow Rate of FYFANON 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 6.3 fluid ounces	3 gallons
20	4.0 to 8.6 fluid ounces	4 gallons

Adult Stable Fly Control - For control of adult stable flies over a 300-foot swath with nonthermal aerosols of FYFANON ULV using the ultra low volume method, use the following flow rates at the indicated vehicle speeds

Vehicle Speed Rate Per Hour	Flow Rate of Fyfanon 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 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 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 FYFANON ULV to control adult mosquitos 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 FYFANON ULV will permanently damage automobile paint unless all the conditions described and recommended in this leaflet are met.

Directions for Determining the Droplet Size of
FYFANON ULV
Nonthermal Aerosols

Permanent records of each droplet size determination must be kept and made available to CHEMI-NOVA, upon request.

I. Preparation of Slides with DRI-FILM®

FYFANON 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.

II. Depositium of FYFANON ULV Droplets on Slides

Droplets should be collected under ideal operating conditions to insure representative sampling of droplets in the aerosol. A sample of the FYFANON 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 sufficient height to obtain a representative sample of the aerosol.

Table 1 - Representative Count of FYFANON ULV Aerosol Droplets impinged on Microscope slides Coated with DRI-FILM*

Eyepiece Divisions (D)	Number of Droplets (N)s	DXN	% of Total DXN (DXN)	Accumulative Percentages
1	5	5	0.31	0.31
2	10	20	1.22	1.53
3	9	27	1.66	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	65.06
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

* Measurements were taken at 400X magnification. Each eyepiece division equals 1.75 microns. (3.5 microns times the 0.5 spread factor).

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.

III. Determination of FYFANON 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 division 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 division into microns.

The measurements converted into microns must then be corrected for that amount of spread that occurred on the slides. The FYFANON ULV spread factor for silicone-coated slides is 0.5. Therefore, in Table one, each division of the eyepiece actually equals 1.75 microns (3.5 microns times the 0.5 spread factor).

The spread factor for TEFLON** - coated slides is 0.59. The following procedure as given for silicone-coated slides, would be the same for TEFLON** - coated slides once the value for the 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 division (D) on arithmetic probability paper as in Figure 1. Directly across from the 50 percent point on the line is the median droplet size in eyepiece divisions times the conversion factor of 1.75 equals a Mass Median Diameter of 16.1 microns.

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.