

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

464 / 18 / 5454960

FEB 15 1994

Ms. Caroline C. Coe
Director, Regulatory Affairs
Lim Laboratories, Inc.
409 E. Main Street
Richmond, VA 23219

Dear Ms. Coe:

Subject: Your Letter of 9/8/93 and WPS Labeling Submitted with
Your Letter Dated 11/22/93 ; HEM-H Bt
EPA Registration No. 66296-1

The labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, is acceptable subject to the comments listed below. One copy of the finished labeling must be submitted prior to releasing the product for shipment.

1) The ingredients statement of your label must be based on the product containing Bacillus thuringiensis used to formulate this product. Modify the ingredient statement to conform to item 2(a) of the 9/2/93 notice of registration for this product.

2) You must follow the type size requirements set forth in item 2(d) of 9/2/93 notice of registration for this product.

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

Sincerely,



Phillip Hutton
Product Manager 18
Insecticide-Rodenticide Branch
Registration Division (7505C)

CONCURRENCES

SYMBOL	7505C						
SURNAME	Mandelstam						
DATE	12/9/93						

LIM LABORATORIES, INC.
HEM-H Bt
 BIOLOGICAL INSECTICIDE
 FLOWABLE CONCENTRATE
 For Control of Insect Pests of Vegetables,
 Fruit and Field Crops

ACTIVE INGREDIENT:

Bacillus thuringiensis variety kurstaki
 Potency of 3,150 International Units
 per milligram

0.6%

INERT INGREDIENTS:

99.4%

TOTAL 100.00%

ACCEPTED
 with COMMENTS
 in EPA Letter Dated
FEB 15 1994

Under the Federal Insecticide,
 Fungicide, and Rodenticide Act
 as amended, for the pesticide
 registered under EPA Reg. No.
66296-1

*Equivalent to 12 Billion International Units per Gallon

Potency units should not be used to adjust use rates beyond those specified in the Directions for Use Section.

KEEP OUT OF REACH OF CHILDREN

C A U T I O N

STATEMENTS OF PRACTICAL TREATMENT

If on skin: Wash with plenty of soap and water. Get medical attention.
 If inhaled: Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. Get medical attention.
 If in Eyes: Flush eyes with plenty of water. Call a physician if irritation persists.

Lim Laboratories, Inc.
 Crop Protection & Pest Control Products
 409 E. Main Street
 Richmond, VA 23219

EPA REGISTRATION No. 66296-1
 EPA ESTABLISHMENT No. 66296-VA-001

NET CONTENTS 1 quart, 1 gallon, 2 gallons, 5 gallons,
55 gallons

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PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS & DOMESTIC ANIMALS
CAUTION

Harmful if inhaled or absorbed through the skin. Causes moderate eye irritation. Avoid breathing dust (vapor or spray mist). Avoid contact with skin, eyes or clothing.

Personal Protective Equipment: Applicators and other handlers must wear:
Long-sleeved shirt and long pants
Waterproof gloves
Shoes and socks

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

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.

ENVIRONMENTAL HAZARDS

Do not contaminate water when disposing of equipment washwaters

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 USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40CFR 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 protection equipment (PPE) and restricted-entry interval (REI). 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
waterproof gloves
socks and shoes

Do not apply this product through any type of irrigation system.

HEM-H Bt is a biological insecticide for the control of lepidopterous larvae (see Recommended Application Rates section).

HEM-H Bt may be applied for control of any labeled pest in both field and greenhouse uses.

HEM-H Bt attacks the larval gut and must be ingested by the insect to be effective.

MIXING

Always mix HEM-H Bt thoroughly before use by shaking or stirring. If using spray adjuvants, add the recommended amounts of the adjuvants to 3/4 volume of the required spray before filling tank. Mix thoroughly. Then add the recommended amount of HEM-H Bt. Be sure to maintain agitation. Finally, add the balance of water and agitate until mixed. Be sure to maintain agitation while loading and spraying to prevent the formulation from settling.

When possible, apply early morning or evening in calm air conditions.

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Do not allow dilute sprays to remain in the tank for more than 12 hours. Loss of activity of **HEM-H Bt** may result.

GROUND APPLICATION

Unless otherwise stated, use recommended amount of **HEM-H Bt** in a minimum of 20 gallons of water per acre depending on type of crop and requirements of state regulations.

AERIAL APPLICATION

Use recommended amount of **HEM-H Bt** in at least 5 gallons of water per acre. Applications at higher water volumes have demonstrated improved control of targeted pests. Apply early morning or evening when air is calm.

GENERAL USE INSTRUCTIONS

For most consistent control apply at first sign of newly hatched worms (1st and 2nd instar larvae).

Reapply as necessary under a pest management program that includes close scouting.

For heavy worm infestations use the higher **HEM-H Bt** rate. During situations of dense foliage and/or rapid growth, increasing water carrier volumes will provide better crop coverage and improve **HEM-H Bt** performance.

The pH of the spray solution should be held within a range of 5.2 to 6.8. Use a buffering agent when spray water has a pH exceeding 7.5.

For application on hard-to-wet crops such as cole crops or under heavy dew or rainy conditions, a spreader/sticker approved for use on growing crops should be added to the tank mix to improve coverage and weathering properties.

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RECOMMENDED APPLICATION RATES

VEGETABLE CROPS

CROP	INSECT	RATE QTS./ACRE	ADDITIONAL INSTRUCTIONS
Artichokes	Artichoke Plume Moth	2	Apply in a minimum of 100 gal. of water per acre with a spray interval of 10 days or less
	Armyworm	2	
	Loopers	2	
Asparagus	Armyworm	1-2	Repeat as necessary to maintain control
Beans (Green, Lima, Mung)			
Broccoli	Diamondback Moth	1	
Brussel Sprouts	Green Cloverworm	1/2-1	
Cabbage	Hornworms	1/2-1	
Cardoon			
Carrots	Imported		
Cauliflower	Cabbageworm	1/2-1	
Celeriac	Loopers	3/4-1 1/2	
Celery			
Chick Peas			
Chinese Broccoli			
Chinese Cabbage	Salt Marsh	1-2	
Collards	Caterpillar		
Cucumbers			
Dry Bulb Onions			
Eggplants	European Corn	1-2	
Garlic	Borer		
Green Onions			
Greens (Dandelion, Turnip, Mustard, Beet, China)			
Herbs (Basil), Cilantro, Dill, Oregano, Thyme, etc.)			
Horseradish			
Kale			
Kohl Rabi			
Leeks			
Lettuce (Endive, Romaine, Head Lettuce, Escarole Butter Crunch, Leaf, etc.)			

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RECOMMENDED APPLICATION RATES

VEGETABLE CROPS

CROP	INSECT	RATE QTS./ACRE	ADDITIONAL INSTRUCTIONS
Melons (Cantaloupe, Crenshaw, Honeydew, Muskmelon, Watermelon, etc.)			
Okra			
Onions			
Parsley			
Parsnips			
Peas			
Peppers			
Potatoes			
Pumpkins			
Radishes			
Rutabaga			
Salsify			
Spinach			
Squash (Summer and Winter)			
Sweet Corn			
Sweet Potatoes			
Swiss Chard			
Table Beets			
Tomatoes			
Turnip Root			
Watercress			
Yams			

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RECOMMENDED APPLICATION RATES

FRUIT, NUT, & VINE CROPS

CROP	INSECT	RATE QTS./ACRE	ADDITIONAL INSTRUCTIONS
Apples and Pears	Fruittree	1-2	Apply when newly hatched larvae appear and before leaves are rolled. Continue applying as a part of the normal cover spray program until pest is adequately controlled.
	Leafroller		
	Gypsy Moth	1-2	
	Redbanded		
	Leafroller	1-2	
	Tufted Apple		
	Budmoth	1-2	
	Variegated		
	Leafroller	1-2	Apply when caterpillars are actively feeding. (2nd-4th instars).
	Omnivorous		
	Leafroller	1-2	
	Tent Caterpillar	1-2	
Avocados	Loopers	2	Apply as necessary to maintain control.
	Orange Tortrix	1-2	
	Omnivorous		
	Leafroller	1-2	
	Amorbia	2	Suppression only.
Bananas	Banana		Hawaii only. Use calibrated ground equipment with adequate water to apply to point of runoff.
	Skipper	1-2	
Citrus	Citrus Cutworm	1-2	Use 50-600 gallons of water per acre when using ground equipment and 10 gallons of water minimum per acre by air.
	Fruittree		
	Leafroller	1-2	
	Orangedog	1/2-1	
	Amorbia	2	Suppression only.

RECOMMENDED APPLICATION RATES

FRUIT, NUT, & VINE CROPS

CROP	INSECT	RATE QTS./ACRE	ADDITIONAL INSTRUCTIONS
Blueberries	Blueberry	1-2	Apply by ground equipment only. Begin treatment as soon as possible after hatching. For leafrollers, apply before larvae are protected by leaf folds.
Caneberries	Leafroller		
Currants	Cherry Fluitworm	1/2-1	
Kiwi	Fruittree		
	Leadfroller		
	Gypsy Moth	1-2	
	Green Fruitworm	1/2-1	
	Loopers	3/4-1 1/2	
	Orange Tortrix	1-2	
	Omnivorous Leafroller	1-2	
Grapes	Grape Leaffolder	1-2	Apply by ground equipment in up to 200 gallons total spray per acre to obtain thorough coverage of leaf surfaces. Start treating as soon as possible after hatching and before larvae are protected by leaf folds.
	Grapeleaf Skeletonizers	1-2	
	Omnivorous Leafroller	1-2	
	Orange Tortrix	1-2	
	Saltmarsh Caterpillar	1-2	
Almonds	Fall Webworm	1-2	For leafrollers, start treating as soon as possible after hatching and before larvae are protected by leaf folds. Apply when caterpillars are actively feeding (2nd to 4th instar).
Apricots	Filbert Webworm	1-2	
Cherries	Omnivorous		
Filberts	Leafroller	1-2	
Vectarines	Citrus Cutworm	1-2	
Peaches	Redhumped	1-2	
Pecans	Caterpillar	1-2	
Persimmons	Tent Caterpillar	1-2	
Plums			
Pomegranate			
Prunes			
Walnuts			
Melons (Also see Vegetables)	Rindworm Complex	1-2	Apply at first sign of hatch before larvae enter fruit. Repeat as necessary to maintain control.

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RECOMMENDED APPLICATION RATES

FRUIT, NUT, & VINE CROPS

CROP	INSECT	RATE QTS./ACRE	ADDITIONAL INSTRUCTIONS
Strawberries	Armyworm	2	Apply as necessary maintain control. 20 gallons water minimum /acre when using ground equipment and 5 gallons water minimum per acre by aircraft.
	Gypsy Moth	1-2	
	Looper	3/4-1 1/2	
	Roughskinned Cutworm	1-2	

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RECOMMENDED APPLICATION RATES

FIELD CROPS

CROP	INSECT	RATE QTS./ACRE	ADDITIONAL INSTRUCTIONS
Alfalfa (Hay and Seed) Sudan Grass Hay Crops & Other Forage Crops	Alfalfa Caterpillar Armyworm Loopers	1/2-1 1 1/2-2 1-1 1/2	Under conditions of rapid plant growth rapidly increasing armyworm populations (10 worms or greater per 180 degree sweep) use the highest rate. Against heterogenous worm populations, where 4th and 5th instars are present, and continuous egg laying, applications may provide variable control.
Small Grains	Armyworm	1 1/2-2	Apply as necessary to maintain control.
Hops	Loopers Omnivorous Leaftier Spotted Cutworm Oblique Banded Leafroller	3/4-1 1/2 1-2 1-2 1-2	Apply as necessary to maintain control Begin treatment as soon as possible after hatching and before larvae are protected by leaf folds.

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RECOMMENDED APPLICATION RATES

FIELD CROPS

CROP	INSECT	RATE QTS./ACRE	ADDITIONAL INSTRUCTIONS
Canola	Armyworm	1-2	Apply as necessary to maintain control.
	Diamondback Moth	1	
Field Corn Pop Corn Seed Corn	Armyworm	1 1/2-2	Make initial Application when economically damaging populations exist. Repeat as necessary to maintain control. Applications must be made to early instars prior to entering the ear or plant. Aids in control.
	Southwestern Corn Borer	2	
	European Corn Borer	2	
Jojoba	Looper (Anacamptodes spp.)	1-2	Apply in minimum 50 gal. of water per acre by ground equipment or a minimum of 10 gal. of water by aerial equipment. Thorough coverage foliage is essential and dictates the minimum spray volumes necessary.

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RECOMMENDED APPLICATION RATES

FIELD CROPS

CROP	INSECT	RATE QTS./ACRE	ADDITIONAL INSTRUCTIONS
Dry Beans and Peas	Armyworms Green	1-2	Apply as necessary to maintain control.
Lentils	Cloverworm	1/2-1	
Mint			
Peanuts	Loopers	3/4-1 1/2	
Rice	Salt Marsh	1-2	
Safflower	Caterpillar		
Soybeans	Velvetbean	1/2-1	
Sugar Beets	Caterpillar		
Sunflower	Heliothis spp.	2	Suppression only
	Cutworm	1-2	
Tobacco	Looper	3/4-1 1/2	Apply as necessary to maintain control.
	Tobacco Hornworm	1/2-1	
	Tobacco Budworm	2	Suppression only

RECOMMENDED APPLICATION RATES

COTTON - Except Arizona and California

TIMING	INSECT	RATE QTS./ACRE	ADDITIONAL INSTRUCTIONS
Early	Bollworm Tobacco Budworm	1-2	For early season management of <u>Heliothis</u> species. Initiate applications when 50% of plants are at pinhead square cotton stage, independent of <u>Heliothis</u> egg and larval counts, or at 1st egg lay, whichever occurs earlier. Continue applications on 5-day spray interval.

RECOMMENDED APPLICATION RATES

COTTON

TIMING	INSECT	RATE QTS./ACRE	ADDITIONAL INSTRUCTIONS
Early and Mid-Season	Armyworm	2	Repeat as necessary throughout season to maintain control. If egg laying frequency indicates future moderate to heavy worm populations, time application spray to coincide with the 2nd instar larvae. During periods of high temperatures, worms will progress through 1st and 3rd instars very rapidly and early application timing is necessary for control. To be effective, HEM-H Bt spray must be deposited at the larval feeding site. When plant cover is dense and worms are feeding in the lower 2/3 portion of the plant, aerial application of HEM-H BT may not provide adequate control.
	Cotton Leaf Perforator	1-2	
	Cotton Leafworm	1-2	
	Loopers	1-2	
	Saltmarsh Caterpillar	1-2	
	Bollworm	1-2	
	Tobacco Budworm	1-2	For the suppression of light to moderate infestations, apply at first sign of egg laying or newly hatched worms (1st instar larvae).

RECOMMENDED APPLICATION RATES

SHADE TREES, ORNAMENTALS (Including Roses)

PESTS	RATE QTS./ACRE	ADDITIONAL INSTRUCTIONS
Spring and Fall Cankerworm Elm Spanworm Test Caterpillar Gypsy	1/2-1 1/2-1 1/2-1 1-2	Apply when leaf expansion reaches 40% to 50% as infestation warrants. If eggs hatch over a long period of time, or if reinfestation occurs, spray about 14 days after first applications.
Spruce Budworm	1-2	Apply when most larvae are 3rd-4th instar. Also consider the opening of the bud cap to ensure foliage exposure.
Jackpine Budworm Douglas Fir Tussock Moth Bagworm California Oak Moth Western Tussock Moth Fruit Tree Leafroller Mimosa Webworm Redhumped Caterpillar Fall Webworm Armyworm	1/2-1 1/2-1 1/2-1 1/2-1 1/2-1 1/2-1 1/4-3/4 1/4-1/2 2	Apply after eggs have hatched and early instar larvae are feeding on exposed foliage.

TURF AND GRASS SEED PRODUCTION

Tropical Sodwebworm Armyworm Sodwebworm	2 2 2	Repeat as necessary throughout season to maintain control.
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S T O R A G E A N D
D I S P O S A L

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

STORAGE

Store in original container in a cool, dry place inaccessible to children and pets and away from heat and direct sunlight. Protect from freezing. Storage at temperature above 90° F may impair effectiveness.

DISPOSAL

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

CONTAINER DISPOSAL

Glass Containers: Triple rinse container. Then dispose of in a sanitary landfill or by other approved State and local procedures.

Metal Containers: Triple rinse container. 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.

Plastic Containers: Triple rinse container. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

WARRANTY

Lim warrants that its HEM-H Bt contains the ingredients listed on this label. Lim makes no other warranties, expressed or implied. Including without limitation, any warranty of merchantability or fitness for a particular purpose.

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