

Reg # 275-66

PM-18

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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331	429,239
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310	429,236
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300	429,238
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331	429,239
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331	429,241
18	
305	422,315
38	

345	429,245
36	
346	429,246
18	

NOV 13 1992

Mr. Marvin H. Alphin  
 Registration Specialist  
 Abbott Laboratories, C.A.P.D.  
 1401 Sheridan Road  
 North Chicago, IL 60064-4000

Dear Mr. Alphin:

Subject: Alternate Formula Specified in the Vectobac 12AS Confidential Statement of Formula Dated 11/28/90 and Modified Labeling Adding 1) Mushrooms and 2) Standing Water in Fields Containing Certain Growing Crops  
 EPA Registration No. 275-66

The amendments referred to above, submitted in connection with registration under section 3(c)(7)(A) of Federal Insecticide, Fungicide, and Rodenticide Act are acceptable provided that you do the following.

1. Submit and/or cite all data required for registration/reregistration of your product under FIFRA section 3(c)(5) and section 4 when the Agency requires all registrants of similar products to submit such data.

2. Make the labeling changes listed below before you release the product for shipment bearing the amended labeling.

a) Replace "Bacillus thuringiensis, Serotype H-14," with "Bacillus thuringiensis subspecies israelensis" in the ingredients statement.

b) Replace the text in the Hazards to Humans section to read "Harmful if absorbed through skin or inhaled. Avoid contact with skin, eyes, or clothing and avoid breathing spray mist. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse."

CONCURRENCES

SYMBOL	H 7505 <sup>c</sup>						
SURNAME	M. H. Alphin						
DATE	11/13/92						

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c) Add the following Statement of Practical Treatment block.

**STATEMENT OF PRACTICAL TREATMENT**

**If in Eyes:** Flush eyes with plenty of water. Get medical attention.

**If on Skin:** Wash thoroughly 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.

d) Add the following statements to the applications directions section within the directions for use section, "When applying this product to standing water containing mosquito larvae in fields growing crops, do not apply this product in such a manner as to directly or through drift expose workers or other persons. The area intended being treated must be vacated by unprotected persons."

e) Add "Do not apply when wind speed favors drift beyond the area of treatment." to the beginning of the application directions section.

f) Modify "Vectobac 12AS has not shown mycotoxicity ... prior to whole house treatment." to read "Vectobac 12AS has not been tested for mycotoxicity on all strains of common commercial mushrooms (Agaricus). Since strains may vary in their sensitivity, this product should be tested on a section of bed prior to whole house treatment."

g) Modify "Vectobac 12AS is not phytotoxic to ornamental plant species." to read "Vectobac 12AS is not known to be phytotoxic to ornamental plant species."

3. Submit an eye irritation study, using the 11/28/90 Vectobac 12AS alternate formulation, that complies with Good Laboratory Practice Regulations within 6 months of this letter.

4. Submit five (5) copies of your final printed labeling before you release your 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 bearing the amended labeling constitutes acceptance of these conditions.

SYNOCL							
SURNAME							
DATE							

3911

A stamped label is enclosed for your records.

Sincerely,



Phil Hutton  
Product Manager 18  
Insecticide-Rodenticide Branch  
Registration Division (H7505C)

Enclosure

CONCURRENCES

SYMBOL							
SURNAME							
DATE							

4 2 11

ACCEPTED  
with COMMENTS  
to EPA Label

NOV 13 1992

Under the Federal Insecticide,  
Fungicide, and Rodenticide Act  
as amended, for the pesticide  
registered under EPA Reg. No.  
275-66

**VECTOBAC<sup>R</sup> 12AS**  
**AQUEOUS SUSPENSION**  
**BIOLOGICAL LARVICIDE**

<b>Active Ingredient:</b> <u>Bacillus thuringiensis</u> , Serotype H-14, 1200 International Toxic Units (ITU) per mg (Equivalent to 4.84 billion ITU per gallon, 1.279 billion ITU per liter).....	1.2%
<u>Inert Ingredients</u> .....	98.8%
<b>Total</b> .....	<b>100.0%</b>

**KEEP OUT OF REACH OF CHILDREN**

**CAUTION**

EPA Reg. No. 275-66

EPA Est. No. 33762-IA-1

**PRECAUTIONARY STATEMENTS**

**Hazards to Humans**

As a precautionary measure in case of contact, flush eyes with plenty of water. In case of irritation, get medical attention.

**PHYSICAL AND CHEMICAL HAZARDS**

Diluted or undiluted VectoBac 12AS can cause corrosion if left in prolonged contact with aluminum spray system components. Rinse spray system with plenty of clean water after use. Care should be taken to prevent contact with aluminum aircraft surfaces, structural components and control systems. In case of contact, rinse thoroughly with plenty of water. Inspect aluminum aircraft components regularly for signs of corrosion.

**DIRECTIONS FOR USE**

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Do not apply directly to treated finished drinking water reservoirs or drinking water receptacles.

**CHEMIGATION**

Do not apply this product through any irrigation system unless the labeling on chemigation is followed.

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**STORAGE AND DISPOSAL**

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

**STORAGE**

Store in a cool [59° - 86°F (15° - 30°C)], dry place.

**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 puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities by burning. If burned, stay out of smoke. Do not reuse container.

**APPLICATION DIRECTIONS**

<b>Mosquito Habitat</b>	<b>Suggested Rate Range*</b>
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(Such as the following examples):  
Irrigation ditches, roadside  
ditches, flood water, standing  
ponds, woodland pools, snow melt  
pools, pastures, catch basins, storm  
water retention areas, tidal water,  
salt marshes and rice fields.

0.25 - 1 pt/acre

In addition, standing water containing mosquito larvae, in fields growing crops such as: Alfalfa, almonds, asparagus, corn, cotton, dates, grapes, peaches and walnuts, may be treated at the recommended rates.

<b>Polluted water</b> (such as <u>sewage lagoons</u> , animal <u>waste lagoons</u> ).	<b>1 - 2 pts/acre</b>
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\*Use higher rate range in polluted water and when late 3rd and early 4th instar larvae predominate, mosquito populations are high, water is heavily polluted, and/or algae are abundant.

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**Blackflies Habitat**

**Suggested Rate Range**

**Streams**

Stream water\*\* (=ppm) for  
1 minute exposure time.

0.5 - 25 mg/liter

Stream water\*\* (=ppm) for  
10 minutes exposure time.

0.05 - 2.5 mg/liter

\*\*Use higher rate range when stream contains high concentration of organic materials, algae, or dense aquatic vegetation.

**Ground and Aerial Application**

VectoBac 12AS may be applied in conventional ground or aerial application equipment with quantities of water sufficient to provide uniform coverage of the target area. The amount of water will depend on weather, spray equipment, and mosquito habitat characteristics. Do not mix more VectoBac 12AS than can be used in a 72 hour period.

For most ground spraying, apply in 5 - 100 gallons of water per acre using hand pump, airblast, mist blower, etc. spray equipment.

For aerial application, VectoBac 12AS may be applied either undiluted or diluted with water. For undiluted applications, apply 0.25 to 2.0 pts/acre of VectoBac-12AS through fixed wing or helicopter aircraft equipped with either conventional boom and nozzle systems or rotary atomizers.

For diluted application, fill the mix tank or plane hopper with the desired quantity of water. Start the mechanical or hydraulic agitation to provide moderate circulation before adding the VectoBac 12AS. VectoBac 12AS suspends readily in water and will stay suspended over normal application periods. Brief recirculation may be necessary if the spray mixture has sat for several hours or longer. AVOID CONTINUOUS AGITATION OF THE SPRAY MIXTURE DURING SPRAYING.

Rinse and flush spray equipment thoroughly following each use.

For blackfly aerial applications, VectoBac 12AS can be applied undiluted via fixed wing or helicopter aircraft equipped with either conventional boom and nozzle systems or open pipes. Rate of application will be determined by the stream discharge and the required amount of VectoBac 12AS necessary to maintain a .5 - 25 ppm concentration in the stream water. VectoBac 12AS can also be applied diluted with similar spray equipment. Do not mix more VectoBac 12AS than can be used in a 72 hour period.

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**Mushroom Flies (Sciaridae and Phoridae)**

**Conventional Agaricus (button) mushrooms:**

For the control of the larval stage of mushroom flies when applied to mushroom compost or casing. When used as a compost drench, apply at spawn or up to 14 days after spawn. The casing treatment should be applied at casing or up to 7 days after casing. Use sufficient water (20 - 50 gallons per 1000 square feet of bed) and proper application equipment to obtain good distribution of the treatment through the growth medium.

**SUGGESTED RATE RANGE:**

**Compost Only Treatment:** Use 2.5 - 5.5 gal/1000 sq. ft. of bed.

**Combination Compost and Casing Treatment:** Use 2.5 - 4.5 gal/1000 sq. ft. of bed at spawn or up to 14 days after spawn plus 0.5 - 1.5 gal/100- sq. ft. of bed at casing or up to 7 days after casing.

Use higher rate when pest pressure is heavy.

Vectobac 12AS has not shown mycotoxicity in research plot testing on common commercial mushrooms (Agaricus). However, since strains may vary in their sensitivity, this product should be tested on a section of bed prior to whole house treatment.

**Exotic and Speciality Mushrooms  
(Such as Shiitake, Oyster, and other varieties)**

For control of the larval stage of mushroom flies when product is applied at spawn, at typical watering time, or when growth medium is soaked. Use sufficient water and proper application equipment to obtain good coverage and distribution of the material through the growth medium.

**SUGGESTED RATE RANGE:**

**Drench or Soak Treatment:** Use 20 - 80 ounces per gallon of water.

Use higher rate when pest pressure is heavy.

VectoBac 12AS has not been tested for mycotoxicity on all types of exotic and speciality mushrooms. This product should be tested on a portion of the crop prior to large scale commercial treatment

**Compatibility:** VectoBac 12AS should not be mixed with water containing chlorine levels in excess of those found in potable water supplies. Materials containing copper and chlorine

) should not be mixed with this product.

Fungus Gnat Habitat  
(All states except California)

Suggested Rate Range

Ornamental Plants in greenhouse, on nursery plantings in potting soil mixtures with high percent peat.

Light Infestation:  
8 - 16 oz/100 gallons\*  
applied as a soil drench.

Heavy Infestation:  
32 - 64 oz/100 gallons\*\*  
applied as a soil drench.

\* 8 - 16 oz/100 gallons = 0.5 - 1 tsp/gallon.

\*\* 32 - 64 oz/100 gallons = 2 - 4 tsp/gallon.

) Apply with adequate water by soil drench to sufficiently wet the soil surface above and under greenhouse benches where larvae are found. Areas under benches should be treated at high rate as this is one of the primary breeding areas. Reapply as needed. In situations where all life forms (eggs, larvae, pupae, and adults) are present, such as with existing infestations, make three (3) weekly applications at the suggested rate range for heavy infestations. Regular follow-up applications using the suggested light infestation rates, will establish a long term maintenance program.

) VectoBac 12AS is a larvicide and will not control adult gnats, therefore, applications must be timed for a stage of development when larvae are present in the soil.

) Fungus gnat larvae generally respond to VectoBac 12AS within 24 hours following application.

) VectoBac 12AS can be applied by injection into drip or overhead (sprinkler) irrigation systems.

) VectoBac 12AS is not phytotoxic to ornamental plant species. However, since all ornamental plant species have not been evaluated, sensitivity to VectoBac 12AS should be checked on several plants prior to wide scale usage.

**PRECAUTIONS**

) **Important:** VectoBac 12AS should not be injected in combination with fertilizers or fungicides containing copper or chlorine, as this may neutralize the active ingredients. (Chlorine levels in potable water supplies should not present a problem with VectoBac 12AS performance).

) Do not apply soil drenches to plants under stress, or follow application with excessive amount of water.



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For best results, apply drenches toward the end of irrigation period.

**SMALL QUANTITY DILUTION RATES**  
**Gallons Spray Solution/Acre**  
**(Ounces Needed per Gallon of Spray)**

<b>VectoBac 12AS Rate in Pints per acre</b>	<b>10 Gal/A</b>	<b>25 Gal/A</b>	<b>50 Gal/A</b>
0.25	0.2	0.1	0.04
0.5	0.4	0.2	0.08
1.0	0.8	0.33	0.16
2.0	1.6	0.65	0.32

**CHEMIGATION**

Apply this product only through: sprinkler including solid set; flood (basin); or drip (trickle) irrigation systems. Do not apply this product through any other type of irrigation system.

Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from nonuniform distribution of treated water.

If you have questions about calibration, you should contact State Extension Service Specialists, equipment manufacturers or other experts.

Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place.

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

**Rice - Flood (Basin) Chemigation**

Systems using a gravity flow pesticide dispensing systems must meter the pesticide into the water at the head of the field and downstream of a hydraulic discontinuity such as a drop structure or weir box to decrease potential for water source contamination from backflow if water flow stops.

VectoBac 12AS is metered or dripped into rice floodwater at application stations positioned at the point of introduction (levee cut) of water into each rice field or pan. Two to 3 pints of VectoBac 12AS are diluted in water to a final volume

of 5 gallons. The diluted solution is contained in a 5 gallon container and metered or dispersed into the irrigation water using a constant flow device at the rate of 80 ml per minute. Introduction of the solution should begin when 1/3 to 1/2 of the pan or field is covered with floodwater. Delivery of the solution should continue for a period of approximately 4-1/2 hours. Floodwater depth should not exceed 10-12 inches to prevent excessive dilution of VectoBac 12AS which could result in reduced larval kill. Agitation is not required during the period in which the VectoBac 12AS suspension is being dispersed.

Application of VectoBac 12AS into rice floodwater is not permitted using a pressurized water and pesticide injection system.

Drip (Trickle) and Sprinkler Chemigation, (Greenhouses and Mushroom Houses)

Public water system means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.

Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone, backflow preventer (RPZ) or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.

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

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

Systems must use a meter pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and

constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

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

The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.

If VectoBac 12AS needs to be diluted prior to injection, material may be mixed separately and then put into the injector. Agitation may be necessary if materials are kept more than one day. VectoBac 12AS may be applied continuously.

Where supply tanks are used for continuous application, fill the supply tank with the desired quantity of water. Start the mechanical or hydraulic agitation to provide moderate circulation before adding VectoBac 12AS. VectoBac 12AS suspends readily in water and will stay suspended over normal application periods. Avoid continuous agitation of spray mixture during spraying. Brief recirculation may be necessary if the spray mixture has sat for several hours.

#### NOTICE TO USER

Seller makes no warranty, expressed or implied, of merchantability, fitness or otherwise concerning use of this product other than as indicated on the label. User assumes all risks of use, storage or handling not in strict accordance with accompanying directions.

Chemical and Agricultural Products Division  
Abbott Laboratories  
1401 Sheridan Road  
North Chicago, Illinois 60064

Phone: 1-800-323-9597

(c) 1991

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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NOV 13 1992

Mr. Marvin H. Alphin  
 Registration Specialist  
 Abbott Laboratories, C.A.P.D.  
 1401 Sheridan Road  
 North Chicago, IL 60064-4000

Dear Mr. Alphin:

Subject: Alternate Formula Specified in the Vectobac 12AS Confidential Statement of Formula Dated 11/28/90 and Modified Labeling Adding 1) Mushrooms and 2) Standing Water in Fields Containing Certain Growing Crops EPA Registration No. 275-66

The amendments referred to above, submitted in connection with registration under section 3(c)(7)(A) of Federal Insecticide, Fungicide, and Rodenticide Act are acceptable provided that you do the following.

1. Submit and/or cite all data required for registration/reregistration of your product under FIFRA section 3(c)(5) and section 4 when the Agency requires all registrants of similar products to submit such data.

2. Make the labeling changes listed below before you release the product for shipment bearing the amended labeling.

a) Replace "Bacillus thuringiensis, Serotype H-14," with "Bacillus thuringiensis subspecies israelensis" in the ingredients statement.

b) Replace the text in the Hazards to Humans section to read "Harmful if absorbed through skin or inhaled. Avoid contact with skin, eyes, or clothing and avoid breathing spray mist. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse."

CONCURRENCES

SYMBOL	MH 7505C						
SURNAME	Mondak						
DATE	11/13/92						

c) Add the following Statement of Practical Treatment block.

**STATEMENT OF PRACTICAL TREATMENT**

**If in Eyes:** Flush eyes with plenty of water. Get medical attention.

**If on Skin:** Wash thoroughly 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.

d) Add the following statements to the applications directions section within the directions for use section, "When applying this product to standing water containing mosquito larvae in fields growing crops, do not apply this product in such a manner as to directly or through drift expose workers or other persons. The area intended being treated must be vacated by unprotected persons."

e) Add "Do not apply when wind speed favors drift beyond the area of treatment." to the beginning of the application directions section.

f) Modify "Vectobac 12AS has not shown mycotoxicity ... prior to whole house treatment." to read "Vectobac 12AS has not been tested for mycotoxicity on all strains of common commercial mushrooms (Agaricus). Since strains may vary in their sensitivity, this product should be tested on a section of bed prior to whole house treatment."

g) Modify "Vectobac 12AS is not phytotoxic to ornamental plant species." to read "Vectobac 12AS is not known to be phytotoxic to ornamental plant species."

3. Submit an eye irritation study, using the 11/28/90 Vectobac 12AS alternate formulation, that complies with Good Laboratory Practice Regulations within 6 months of this letter.

4. Submit five (5) copies of your final printed labeling before you release your product for shipment.

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

CONCURRENCES							
SYMBOL							
SURNAME							
DATE							

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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A stamped label is enclosed for your records.

Sincerely,



Phil Hutton  
Product Manager 18  
Insecticide-Rodenticide Branch  
Registration Division (H7505C)

Enclosure

CONCURRENCES

SYMBOL							
SURNAME							
DATE							

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ACCEPTED  
with COMMENTS  
by EPA

NOV 13 1992

Under the Federal Insecticide,  
Fungicide, and Rodenticide Act  
as amended, for the pesticide  
registered under EPA Reg. No.  
275-66

VECTOBAC<sup>R</sup> 12AS  
AQUEOUS SUSPENSION  
BIOLOGICAL LARVICIDE

Active Ingredient: <u>Bacillus thuringiensis</u> , Serotype H-14, 1200 International Toxic Units (ITU) per mg (Equivalent to 4.84 billion ITU per gallon, 1.279 billion ITU per liter).....	1.2%
<u>Inert Ingredients.....</u>	<u>98.8%</u>
Total.....	100.0%

KEEP OUT OF REACH OF CHILDREN

CAUTION

EPA Reg. No. 275-66

EPA Est. No. 33762-IA-1

PRECAUTIONARY STATEMENTS

Hazards to Humans

As a precautionary measure in case of contact, flush eyes with plenty of water. In case of irritation, get medical attention.

PHYSICAL AND CHEMICAL HAZARDS

Diluted or undiluted VectoBac 12AS can cause corrosion if left in prolonged contact with aluminum spray system components. Rinse spray system with plenty of clean water after use. Care should be taken to prevent contact with aluminum aircraft surfaces, structural components and control systems. In case of contact, rinse thoroughly with plenty of water. Inspect aluminum aircraft components regularly for signs of corrosion.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Do not apply directly to treated finished drinking water reservoirs or drinking water receptacles.

CHEMIGATION

Do not apply this product through any irrigation system unless the labeling on chemigation is followed.

**STORAGE AND DISPOSAL**

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

**STORAGE**

Store in a cool [59° - 86°F (15° - 30°C)], dry place.

**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 puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities by burning. If burned, stay out of smoke. Do not reuse container.

**APPLICATION DIRECTIONS**

**Mosquito Habitat**

**Suggested Rate Range\***

(Such as the following examples):  
Irrigation ditches, roadside  
ditches, flood water, standing  
ponds, woodland pools, snow melt  
pools, pastures, catch basins, storm  
water retention areas, tidal water,  
salt marshes and rice fields.

0.25 - 1 pt/acre

In addition, standing water containing mosquito larvae, in fields growing crops such as: Alfalfa, almonds, asparagus, corn, cotton, dates, grapes, peaches and walnuts, may be treated at the recommended rates.

**Polluted water**  
(such as sewage lagoons, animal  
waste lagoons).

1 - 2 pts/acre

\*Use higher rate range in polluted water and when late 3rd and early 4th instar larvae predominate, mosquito populations are high, water is heavily polluted, and/or algae are abundant.



**Blackflies Habitat**

**Suggested Rate Range**

**Streams**

Stream water\*\* (=ppm) for  
1 minute exposure time.

0.5 - 25 mg/liter

Stream water\*\* (\*ppm) for  
10 minutes exposure time.

0.05 - 2.5 mg/liter

\*\*Use higher rate range when stream contains high concentration of organic materials, algae, or dense aquatic vegetation.

**Ground and Aerial Application**

VectoBac 12AS may be applied in conventional ground or aerial application equipment with quantities of water sufficient to provide uniform coverage of the target area. The amount of water will depend on weather, spray equipment, and mosquito habitat characteristics. Do not mix more VectoBac 12AS than can be used in a 72 hour period.

For most ground spraying, apply in 5 - 100 gal'ons of water per acre using hand pump, airblast, mist blower, etc. spray equipment.

For aerial application, VectoBac 12AS may be applied either undiluted or diluted with water. For undiluted applications, apply 0.25 to 2.0 pts/acre of VectoBac-12AS through fixed wing or helicopter aircraft equipped with either conventional boom and nozzle systems or rotary atomizers.

For diluted application, fill the mix tank or plane hopper with the desired quantity of water. Start the mechanical or hydraulic agitation to provide moderate circulation before adding the VectoBac 12AS. VectoBac 12AS suspends readily in water and will stay suspended over normal application periods. Brief recirculation may be necessary if the spray mixture has sat for several hours or longer. AVOID CONTINUOUS AGITATION OF THE SPRAY MIXTURE DURING SPRAYING.

Rinse and flush spray equipment thoroughly following each use.

For blackfly aerial applications, VectoBac 12AS can be applied undiluted via fixed wing or helicopter aircraft equipped with either conventional boom and nozzle systems or open pipes. Rate of application will be determined by the stream discharge and the required amount of VectoBac 12AS necessary to maintain a .5 - 25 ppm concentration in the stream water. VectoBac 12AS can also be applied diluted with similar spray equipment. Do not mix more VectoBac 12AS than can be used in a 72 hour period.

## Mushroom Flies (Sciaridae and Phoridae)

### Conventional Agaricus (button) mushrooms:

For the control of the larval stage of mushroom flies when applied to mushroom compost or casing. When used as a compost drench, apply at spawn or up to 14 days after spawn. The casing treatment should be applied at casing or up to 7 days after casing. Use sufficient water (20 - 50 gallons per 1000 square feet of bed) and proper application equipment to obtain good distribution of the treatment through the growth medium.

#### SUGGESTED RATE RANGE:

Compost Only Treatment: Use 2.5 - 5.5 gal/1000 sq. ft. of bed

Combination Compost and Casing Treatment: Use 2.5 - 4.5 gal/1000 sq. ft. of bed at spawn or up to 14 days after spawn plus 0.5 - 1.5 gal/100- sq. ft. of bed at casing or up to 7 days after casing.

Use higher rate when pest pressure is heavy.

Vectobac 12AS has not shown mycotoxicity in research plot testing on common commercial mushrooms (Agaricus). However, since strains may vary in their sensitivity, this product should be tested on a section of bed prior to whole house treatment.

### Exotic and Speciality Mushrooms

(Such as Shiitake, Oyster, and other varieties)

For control of the larval stage of mushroom flies when product is applied at spawn, at typical watering time, or when growth medium is soaked. Use sufficient water and proper application equipment to obtain good coverage and distribution of the material through the growth medium.

#### SUGGESTED RATE RANGE:

Drench or Soak Treatment: Use 20 - 80 ounces per gallon of water.

Use higher rate when pest pressure is heavy.

VectoBac 12AS has not been tested for mycotoxicity on all types of exotic and speciality mushrooms. This product should be tested on a portion of the crop prior to large scale commercial treatment.

Compatibility: VectoBac 12AS should not be mixed with water containing chlorine levels in excess of those found in potable water supplies. Materials containing copper and chlorine

should not be mixed with this product.

Fungus Gnat Habitat  
(All states except California)

Suggested Rate Range

Ornamental Plants in greenhouse, on  
nursery plantings in potting soil  
mixtures with high percent peat.

Light Infestation:  
8 - 16 oz/100 gallons\*  
applied as a soil drench.

Heavy Infestation:  
32 - 64 oz/100 gallons\*\*  
applied as a soil drench.

\* 8 - 16 oz/100 gallons = 0.5 - 1 tsp/gallon.

\*\* 32 - 64 oz/100 gallons = 2 - 4 tsp/gallon.

Apply with adequate water by soil drench to sufficiently wet the soil surface above and under greenhouse benches where larvae are found. Areas under benches should be treated at high rate as this is one of the primary breeding areas. Reapply as needed. In situations where all life forms (eggs, larvae, pupae, and adults) are present, such as with existing infestations, make three (3) weekly applications at the suggested rate range for heavy infestations. Regular follow-up applications using the suggested light infestation rates, will establish a long term maintenance program.

VectoBac 12AS is a larvicide and will not control adult gnats, therefore, applications must be timed for a stage of development when larvae are present in the soil.

Fungus gnat larvae generally respond to VectoBac 12AS within 24 hours following application.

VectoBac 12AS can be applied by injection into drip or overhead (sprinkler) irrigation systems.

VectoBac 12AS is not phytotoxic to ornamental plant species. However, since all ornamental plant species have not been evaluated, sensitivity to VectoBac 12AS should be checked on several plants prior to wide scale usage.

**PRECAUTIONS**

Important: VectoBac 12AS should not be injected in combination with fertilizers or fungicides containing copper or chlorine, as this may neutralize the active ingredients. (Chlorine levels in potable water supplies should not present a problem with VectoBac 12AS performance).

Do not apply soil drenches to plants under stress, or follow application with excessive amount of water.

For best results, apply drenches toward the end of irrigation period.

**SMALL QUANTITY DILUTION RATES**  
**Gallons Spray Solution/Acre**  
**(Ounces Needed per Gallon of Spray)**

**VectoBac 12AS**  
**Rate in Pints**  
**per acre**

	10 Gal/A	25 Gal/A	50 Gal/A
0.25	0.2	0.1	0.04
0.5	0.4	0.2	0.08
1.0	0.8	0.33	0.16
2.0	1.6	0.65	0.32

**CHEMIGATION**

Apply this product only through: sprinkler including solid set; flood (basin); or drip (trickle) irrigation systems. Do not apply this product through any other type of irrigation system.

Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from nonuniform distribution of treated water.

If you have questions about calibration, you should contact State Extension Service Specialists, equipment manufacturers or other experts.

Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place.

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

Rice - Flood (Basin) Chemigation

Systems using a gravity flow pesticide dispensing systems must meter the pesticide into the water at the head of the field and downstream of a hydraulic discontinuity such as a drop structure or weir box to decrease potential for water source contamination from backflow if water flow stops.

VectoBac 12AS is metered or dripped into rice floodwater at application stations positioned at the point of introduction (levee cut) of water into each rice field or pan. Two to 3 pints of VectoBac 12AS are diluted in water to a final volume

of 5 gallons. The diluted solution is contained in a 5 gallon container and metered or dispersed into the irrigation water using a constant flow device at the rate of 80 ml per minute. Introduction of the solution should begin when 1/3 to 1/2 of the pan or field is covered with floodwater. Delivery of the solution should continue for a period of approximately 4-1/2 hours. Floodwater depth should not exceed 10-12 inches to prevent excessive dilution of VectoBac 12AS which could result in reduced larval kill. Agitation is not required during the period in which the VectoBac 12AS suspension is being dispersed.

Application of VectoBac 12AS into rice floodwater is not permitted using a pressurized water and pesticide injection system.

Drip (Trickle) and Sprinkler Chemigation, (Greenhouses and Mushroom Houses)

Public water system means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.

Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone, backflow preventer (RPZ) or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.

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

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

Systems must use a meter pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and

constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

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

The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.

If VectoBac 12AS needs to be diluted prior to injection, material may be mixed separately and then put into the injector. Agitation may be necessary if materials are kept more than one day. VectoBac 12AS may be applied continuously.

Where supply tanks are used for continuous application, fill the supply tank with the desired quantity of water. Start the mechanical or hydraulic agitation to provide moderate circulation before adding VectoBac 12AS. VectoBac 12AS suspends readily in water and will stay suspended over normal application periods. Avoid continuous agitation of spray mixture during spraying. Brief recirculation may be necessary if the spray mixture has sat for several hours.

#### NOTICE TO USER

Seller makes no warranty, expressed or implied, of merchantability, fitness or otherwise concerning use of this product other than as indicated on the label. User assumes all risks of use, storage or handling not in strict accordance with accompanying directions.

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