

**Thuricide 48 LV**

Biological Insecticide

Aqueous Concentrate for Aerial or Ground Application

For Control of Insect Pests on Fruits and Nuts, Vegetables, Cotton and Soybeans

**ACTIVE INGREDIENT:***Bacillus thuringiensis kurstaki* solids, spores, and insecticidal toxins\*.....19.0%

INERT INGREDIENTS:.....81.0%

TOTAL:.....100.0%

\* The percentage active ingredient does not indicate product performance and potency measurements are not federally standardized.

**KEEP OUT OF REACH OF CHILDREN****CAUTION**

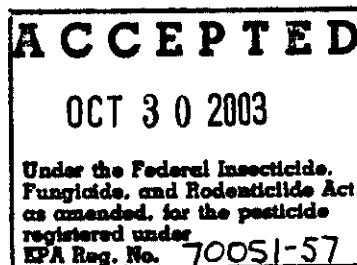
EPA Registration Number: 70051-57

EPA Establishment Number: 70051-CA-001

Net Contents: 5 gal., 53 gal., Bulk

Lot No.:

Made in U.S.A.

**FIRST AID**

**If inhaled:** Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

**If in eyes:** Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. Hot Line Number: 1-800-255-3924.

**PRECAUTIONARY STATEMENTS**

**HAZARDS TO HUMANS—CAUTION:** Harmful if inhaled. Avoid breathing spray mist. Causes moderate eye irritation. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash clothing before reuse.

**Personal Protective Equipment:**

Applicators and other handlers must wear:

-Long-sleeved shirt and long pants

- Waterproof gloves
- Shoes plus socks

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

Mixer/loaders and applicators must wear a dust/mist filtering respirator meeting NIOSH standards of at least N-95, R-95 or P-95. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.

#### Engineering Controls Statement

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.

#### 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.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment-and-weather-related factors determines the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions.

#### ENVIRONMENTAL HAZARDS:

Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean water mark. Do not contaminate water when disposing of equipment washwaters or rinsate.

**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, 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), and restricted-entry interval. 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 4 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
- Shoes plus socks

Suspension must be shaken or stirred before use. Pour the application rate amount of Thuricide 48 LV into the required volume of water in the spray tank. Agitate as necessary to maintain suspension. Do not allow diluted sprays to remain in the tank for more than 72 hours. Thuricide 48 LV is formulated to provide desirable coverage and stickability on leaf surfaces. Additional adjuvants, spreaders, or stickers may be added but are not essential.

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

**GROUND APPLICATION**

Use adequate water to obtain good foliar coverage. Wet foliage but do not allow excessive runoff. Apply the per acre application rates of Thuricide 48 LV with the following amounts of water:

- 100 gallons with high-gallonage hydraulic sprayers
- 10 gallons with mist blower

**AERIAL APPLICATION**

Apply Thuricide 48 LV at application rates by air either alone or as a spray mix diluted with water. Use spray volumes of 32-128 ounces per acre. Best results are expected

when Thuricide 48 LV is applied to dry foliage with a calibrated aircraft capable of obtaining droplet sizes below 300 microns and preferably in the range of 50-150 microns.

## **APPLICATION RATES FOR CONTROL OF PESTS OF FRUIT AND NUT CROPS, COTTON, VEGETABLES, AND SOYBEANS**

### **SPRAY VOLUME RATES**

For conventional aerial applications use at least 2 gallons of total volume per acre in water based sprays, except in the western U.S. where 5 to 10 gallons is the usual minimum. For ground application, use at least 5 gallons of volume per acre. For Ultra-Low Volume aerial applications, mix **Thuricide 48 LV** with vegetable or cottonseed oil and apply in a volume of 1.0-2.25 quarts per acre or apply undiluted.

### **COTTON – EARLY SEASON PROGRAM**

#### **Pre-squaring stage:**

Use **Thuricide 48 LV** for early season management of *Helicoverpa zea* and *Heliothis virescens* under conditions of continuous low egg deposition. Use **Thuricide 48 LV** alone at 0.5 pint/acre or in combination with an ovicide, boll weevil sprays, or Pix applications. When egg pressure is moderate to high, tank mix **Thuricide 48 LV** with an ovicide. Use a spray interval of 5-7 days for a total of 3 applications, if necessary, especially if continued egg pressure occurs during this period.

#### **Pre-bloom stage:**

For control of light to moderate populations, use **Thuricide 48 LV** at 0.75 to 2.0 pints/acre in combination with an ovicide such as LARVIN (thiodicarb). Repeat treatments at 4 to 5 day intervals or as long as necessary to maintain control. Direct applications at brown eggs and newly hatched larvae. Larvae should not exceed 2,500 per acre (approximately 4 percent of plants infested) before treatments are initiated. Close scouting is essential for well-timed applications.

### **MID-SEASON PROGRAM**

#### **Pre-bloom to first mature boll stage**

Use **Thuricide 48 LV** at 0.75 to 4.0 pints/acre in combination with  $\frac{1}{2}$  to  $\frac{3}{4}$  rate of a synthetic pyrethroid during midseason. Use the lower rates under moderate pressure and increase rates if necessary to maintain control.

### **LATE SEASON PROGRAM**

#### **Mature bloom boll stage:**

Use **Thuricide 48 LV** at 0.75 to 4.0 pints/acre in combination with suggested carbamate or organophosphate insecticides. This product will aid in controlling worms escaping from organophosphate insecticides.

**Thuricide 48 LV** can be mixed with other insecticides in accordance with the more restrictive label limitations and precautions. This product cannot be mixed with any other product having a label which prohibits such mixing.

### Spray Volumes:

For aerial applications, use a minimum of 2 gallons of total volume per acre in water based sprays except in the western United States where 5 to 10 gallons is the usual minimum. For ground applications, use at least 5 gallons of total volume per acre with 3 nozzles per row. For banded applications, use a minimum of 2 nozzles per row with ground sprayer or cultivator. Do not use rates less than 0.5 pint/acre on a broadcast basis. For ULV applications, mix 1 to 2 pints **Thuricide 48 LV** with 1 to 2.5 pints vegetable or cottonseed oil and apply in a total volume of 1.0 to 2.25 quarts per acre. Adjust the spray system to deliver a fine droplet spectrum. Generally, rotary atomizers produce a finer droplet spectrum for ULV applications.

### THURICIDE 48 LV RATE FOR COTTON (all states except California)

Crop	Pest	Pints/Acre (Ground and Aerial)
Cotton	Tobacco Budworm <sup>2</sup>	1.0-4.0
	Cotton Bollworm	1.0-4.0
	Armyworm <sup>1</sup>	2.0-4.0
	Looper	1.0-4.0
	Saltmarsh Caterpillar	1.0-4.0

For use in California, see California Crops section of label

### Timing of Application

<sup>1</sup>Use **Thuricide 48 LV** to control small armyworm (1<sup>st</sup> and 2<sup>nd</sup> instar) when populations are light and full coverage sprays are applied. Repeat treatments as necessary. If mature worms or heavy populations are present use a contact insecticide to enhance control.

<sup>2</sup>Use **Thuricide 48 LV** to control light to moderate populations of newly hatched worms in pest management programs. Use under close scouting when beneficial insects are active or building. Repeat treatments at 4 to 5 day intervals or as long as necessary and results are acceptable. **Thuricide 48 LV** can be mixed with Larvin for use on cotton against tobacco budworm and cotton bollworm in accordance with the more restrictive of label limitations and precautions. Do not exceed label dosage rates. This product cannot be mixed with any product containing a label prohibition against such mixing. Use **Thuricide 48 LV** alone for *Helicoverpa zea* and *Heliothis virescens* control only on prebloom cotton where few or no eggs are present. If significant eggs are present, use only in combination with ovicidal rates of Larvin. Larvin is a trademark of Rhone-Poulenc Ag Company.

**THURICIDE 48 LV FOR PEANUTS**  
(for all states except California)

Crop	Pest	Pints/Acre (Ground and Aerial Applications)
Peanut	Green Cloverworm	1.0-2.0
	Looper	1.0-2.0
	Podworm	2.0-4.0
	Velvetbean	
	Caterpillar	1.0-2.0
	Armyworm	2.0-4.0

Use **Thuricide 48 LV** to control podworms and armyworms when populations are light to moderate and good spray coverage can be achieved. Use **Thuricide 48 LV** at 1.0-4.0 pints/acre (2.0-4.0 pints/acre for armyworm) when small larvae first appear. Make applications to coincide with egg lay and early instar larvae. Under conditions of higher pressure and rapid plant development, use a contact insecticide in combination with **Thuricide 48 LV**. Repeat treatments as necessary to maintain acceptable control.

**THURICIDE 48 LV FOR ALFALFA, HAY AND OTHER FORAGE CROPS**  
(for all states except California)

Crop	Pest	Pints/Acre (Ground and Aerial Applications)
Alfalfa (hay and seed) Hay and Other Forage Crops*	Armyworm	2.0-4.0
	Looper	1.0-2.0
	Alfalfa	
	Caterpillar	1.0-2.0
	European Skipper	1.0-2.0
	Webworm	1.0-2.0

\*For use in California -See the California Crops section of this label

**Application Timing**

Use **Thuricide 48 LV** to control small armyworms (1<sup>st</sup> and 2<sup>nd</sup> instar) when populations are light and full coverage sprays are applied. Repeat treatment as necessary. If mature worms or heavy populations are present use a contact insecticide to enhance control.

**THURICIDE 48 LV FOR OTHER CROPS (including California)**

Crop	Pest	Pints/Acre (Ground and Aerial Applications)
<b>Legume Vegetables</b> Vegetables including fruiting vegetables such as Bean, Pea, Lentil, and Soybean, Tomato, Cabbage (including Chinese Cabbage), Melons, Peppers, Cucurbits	Looper Green Cloverworm Velvetbean Caterpillar Podworm Armyworm Soybean Looper Saltmarsh Caterpillar Cabbage Looper Cutworm	1.0-2.0    2.0-4.0 1.0-2.0 1.0-2.0 1.0-2.0 1.0-2.0
<b>Root and Tuber*</b> Crops such as Sugar Beet, Carrot, and Potato	Armyworm Cutworm Diamondback Moth Hornworm Looper European Corn Borer	2.0-4.0 1.0-4.0 1.0-2.0 1.0-2.0 2.0-4.0 1.0-2.0
<b>Stone Fruit</b> such as Cherry, Plum, Peach, Prune, Nectarine	Cankerworm Codling Moth Fall Webworm	1.0-2.0 1.0-2.0 1.0-2.0
<b>Pome Fruit</b> such as Apple, Pear	Leafroller Gypsy Moth	1.0-4.0 1.0-4.0
<b>Tree Nuts</b> such as Almond, Pecan, Walnut, Pistachio, Filbert	Redhumped Caterpillar Tent Caterpillar Tufted Apple	1.0-4.0 1.0-4.0 1.0-4.0 1.0-4.0
<b>Pomegranate</b>	Budworm, Walnut Caterpillar, Armyworm <sup>1</sup> Oriental Fruit Moth Peach Twig Borer Pecan Nut Casebearer Navel Orangeworm	1.0-4.0  2.0-4.0 1.0-4.0 1.0-4.0 1.0-4.0 2.0-4.0
<b>Hops</b>	Armyworm <sup>1</sup> Looper	2.0-4.0 1.0-2.0
<b>Tobacco</b>	Tobacco Budworm Hornworm Looper	1.0-4.0 1.0-4.0 1.0-4.0

\*For use in California, see the California Crops section of this label.

**Application Timing**

Use Thuricide 48 LV to control small armyworms and/or podworms (1<sup>st</sup> and 2<sup>nd</sup> instar) when populations are light, apply full coverage sprays. Repeat treatment as necessary. If mature worms or heavy populations are present use a contact insecticide to enhance control.

Thuricide 48 LV For Other Crops Including California (Continued)

Crop	Pest	Pints/Acre (Ground and Aerial Applications)
Small Fruits and Berries such as Blueberry, Grape, Cranberry and Strawberry	Spanworm	1.0-2.5
	Gypsy Moth	1.0-2.5
	Blossom Worm	1.0-2.5
	Sparganothis	
	Fruitworm	1.0-2.5
	Fireworm	1.0-2.5
	Cranberry	
	Fruitworm	1.0-2.5
	Armyworm	2.0-4.0
	Black Cutworm	1.0-2.5
	Looper	1.0-2.5
	Tent Caterpillar	1.0-2.5

**Application Timing**

Treat when larvae are young and before economic threshold of damage have been exceeded. If hatch occurs over an extended period of time, consider multiple applications. Use higher rates when pest pressure is heavy and/or older larvae are present. Tank mixes of **Thuricide 48 LV** plus a low rate of contact insecticide (such as phosmet) registered for use on small fruit and berries may enhance control of heavy populations and large larvae. An approved spreader-sticker can be used.

**THURICIDE 48 LV FOR CALIFORNIA CROPS**

Crop	Pest	Pints/Acre Ground and Aerial Applications)
Cotton	Armyworm <sup>1</sup>	2.0-4.0
	Looper	1.0-2.0
Alfalfa (Hay and Seed) Hay and Other Forage Crops	Armyworm <sup>1</sup>	2.0-4.0
	Alfalfa	1.0-2.0
	Caterpillar	
Root and Tuber such as Sugar Beets, Carrots, and Potato	Armyworm <sup>1</sup>	2.0-4.0

<sup>1</sup>See prior sections of this label for further use directions.

**Application Timing**

Use **Thuricide 48 LV** to control small armyworm (1<sup>st</sup> and 2<sup>nd</sup> instar) when populations are light, apply full coverage sprays. Repeat treatment as necessary. If mature worms or heavy populations are present use a contact insecticide to enhance control.



**Thuricide 48 LV for Corn**

Crop	Pest	Pints/Acre (Ground Application)	Pints/Acre (Aerial Application.)
Corn –Field, Sweet, Pop, Silage, and Seed	European Corn Borer and Southwestern Corn Borer (1 <sup>st</sup> and 2 <sup>nd</sup> generation	1.5-2.5	1.5-2.5

Apply in 6 to 8 inch band directly over whorls; Refer to table below for over the row rates.

**FLUID OUNCES APPLIED PER 1,000 ROW FEET**

Row Width	Label Rate/Acre	
	1.5 Pts.	2.5 Pts.
30	1.4 oz/1000 ft.	2.3 oz/1000 ft.
32	1.5oz/1000 ft.	2.5 oz/1000 ft.
36	1.7 oz/1000 ft.	2.8 oz/1000 ft.

**Timing of Application**

Make application when young larvae are present for the first or second generation corn borers. One application against the first generation of larvae should provide economic control. Two or more applications may be required against second generation corn borers if there is an extended period of egg deposition.

**First Generation**

Apply **Thuricide 48 LV** on seed corn when no more than 15% to 25% of the corn shows "shot hole" feeding in the whorls.

With irrigated or sweet corn, apply **Thuricide 48 LV** when not more than 25% to 35% of the whorls show feeding signs

With dryland corn, apply **Thuricide 48 LV** when not more than 35% to 40% of the leaves show "shot hole" feeding signs.

**Second Generation**

Apply **Thuricide 48 LV** when a field count shows not more than 50 egg masses per 100 plants and the first hatch is taking place.

# APPLICATION RATES FOR SMALLER SPRAY VOLUMES

If Rate is	Use This Amount Per Gallon
½ pt./acre or 100 gallons	½ tsp.
1 pt./acre or 100 gallons	1 tsp.
2 pts./acre or 100 gallons	2 tsps.
4 pts./acre or 100 gallons	4 tsps.

## STORAGE AND DISPOSAL

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

**Pesticide Storage:** Store in a cool place. Activity may be impaired by prolonged storage at temperatures above 90 F. Protect from freezing.

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

**Plastic Containers:** Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke. Reuse of thoroughly cleaned container is allowable

**Metal Containers:** Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or, by other procedures approved by state and local authorities. Reuse of thoroughly cleaned container is allowable

## Warranty

Certis USA warrants that the material contained herein conforms to the description on the label and is reasonably fit for the purposes referred to in the directions for use. Timing and method of application, weather, watering practices, nature of soil, the insect problem, condition of the crop, incompatibility with other chemicals not specifically recommended, and other influencing factors in the use of this product are beyond the control of the seller. Buyer assumes all risks of use, storage or handling of this material not in strict accordance with directions given herein. NO OTHER EXPRESS OR IMPLIED WARRANTY OF THE FITNESS OR MERCHANTABILITY IS MADE.

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Certis USA  
9145 Guilford Road, Suite 175  
Columbia, MD 21046

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