

2024-2027  
2024-06-26

<b>GROUP 32 INSECTICIDE</b>
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{Optional Marketing Claims for Container and Booklet in Brackets}  
[container label]

**SPEAR-LEP**  
**Biological Insecticide**

SOLUTION

Commercial

For control of lepidopteran larvae (caterpillars, loopers) in fruit trees, cranberries and vegetables

**READ THE LABEL AND ATTACHED BOOKLET BEFORE USING**

**KEEP OUT OF REACH OF CHILDREN**

**ACTIVE INGREDIENT:** GS-omega/kappa-Hxtx-Hv1a ..... 2.00% (w/w)

Contains 1,2-benzisothiazolin-3-one at 0.09% as a preservative

CAUTION-SKIN IRRITANT

REGISTRATION NO.: \_\_\_\_ 34678 \_\_\_\_ PEST CONTROL PRODUCTS ACT

NET CONTENTS: 0.5 L – 1050 L, Bulk

Batch/Lot:

Vestaron Corporation  
4025 Stirrup Creek Drive, Suite 400  
NC 27709, USA  
Phone: 1-919-694-1022

**PRECAUTIONS:**  
**KEEP OUT OF REACH OF CHILDREN**

May cause skin irritation. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet.

**Personal Protective Equipment (PPE):** Workers must wear long-sleeved shirt, long pants, chemical-resistant gloves, and socks and shoes during mixing, loading, application, clean-up and repair. Gloves are not required during application within a closed cab.

During airblast applications, workers must wear chemical-resistant coveralls with a chemical-resistant hood over long-sleeved shirt, long pants, chemical-resistant gloves, socks, chemical-resistant footwear and a respirator with a NIOSH-approved organic-vapour-removing cartridge with a prefilter approved for pesticides OR a NIOSH-approved canister approved for pesticides.

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

**USER SAFETY RECOMMENDATIONS**

Remove clothing/PPE 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.

**Restricted Entry Interval (REI):** DO NOT enter or allow worker entry into treated areas for 4 hours, or until sprays have dried, unless wearing the appropriate PPE specified for the method of application.

Apply only to agricultural crops when the potential for drift to areas of human habitation and human activity, such as houses, cottages, schools and recreational areas is minimal. Take into consideration wind speed, wind direction, temperature inversions, application equipment and sprayer settings.

**DO NOT** apply by air.

**FIRST AID**

**If swallowed,** call a poison control centre or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control centre or doctor. Do not give anything by mouth to an unconscious person.

**If on skin or clothing,** take off contaminated clothing. Rinse skin immediately with plenty of water for 15–20 minutes. Call a poison control centre or doctor for treatment advice.

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

Take container, label or product name and Pest Control Product Registration Number with you when seeking medical attention

**TOXICOLOGICAL INFORMATION:**

Treat symptomatically.

**STORAGE:**

Store this product away from food or feed. Store product in original container at room temperature for up to one year. Do not allow product to freeze. Finish all the product after opening the bottle. Do not store opened bottle for later use. Do not contaminate water, food or feed by storage or disposal.

**DISPOSAL:**

**Recyclable containers:**

DO NOT reuse this container for any purpose. This is a recyclable container, and is to be disposed of at a container collection site. Contact your local distributor/dealer or municipality for the location of the nearest collection site. Before taking the container to the collection site:

1. Triple- or pressure-rinse the empty container. Add the rinsings to the spray mixture in the tank.
2. Make the empty, rinsed container unsuitable for further use.

If there is no container collection site in your area, dispose of the container in accordance with provincial requirements.

**Returnable containers:**

DO NOT reuse this container for any purpose. For disposal, this empty container may be returned to the point of purchase (distributor/dealer).

**Refillable containers:**

For disposal, this container may be returned to the point of purchase (distributor/dealer). It must be refilled by the distributor/dealer with the same product. Do not reuse this container for any other purpose.

For information on disposal of unused, unwanted product, contact the manufacturer or the provincial regulatory agency. Contact the manufacturer and the provincial regulatory agency in case of a spill, and for clean-up of spills.

**NOTICE TO USER:**

This pest control product is to be used only in accordance with the directions on the label. It is an offence under the *Pest Control Products Act* to use this product in a way that is inconsistent with the directions on the label.

[booklet]

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#### **PRODUCT INFORMATION**

SPEAR-LEP is a biological insecticide containing the peptide active ingredient GS-omega/kappa-Hctx-Hv1a for use on fruit and vegetable crops. SPEAR-LEP will control labelled lepidopteran pests when tank-mixed with the low labelled rate of *Bacillus thuringiensis* (Bt) products containing the subspecies *kurstaki* (Btk), such as Bioprotec, DiPel, Foray 48BA, ReVok<sup>BTK</sup> and Thuricide-HPC, and or products containing the subspecies *aizawai* (Bta), such as XenTari that are registered on the crop. SPEAR-LEP functions primarily as a central nervous system inhibitor of target pests infesting labeled crops. SPEAR-LEP is mixed with water and applied as a foliar spray with ground equipment equipped for conventional insecticide spraying with fine nozzles to minimize droplet size.

## USE INSTRUCTIONS

SPEAR-LEP is a highly selective insecticide for use against the listed insects. Close scouting and early attention to infestations is highly recommended. Proper timing of application targeting newly hatched larvae is important for optimal results. {SPEAR-LEP is not effective on the egg stage.}

Thorough coverage of infested plant parts is necessary; SPEAR-LEP does not have systemic activity.

SPEAR-LEP has been evaluated for phytotoxicity on a variety of crops under various normal growing conditions. However, testing all crop varieties in all mixtures and combinations is not feasible. Prior to treating entire crop, test a small portion of the crop for sensitivity.

### **Integrated Pest Management (IPM):**

SPEAR-LEP is an important tool in sound insect management whenever insecticide use is necessary. Apply SPEAR-LEP with Bt alone or in rotation with chemical insecticides. This will result in reduced susceptibility to insect damage, overall reduced use of chemical insecticides, and delayed development of pesticide resistance. Consult with a pest control advisor, extension agent or the manufacturer before treating an entire crop where beneficial insects serve as part of an IPM program. Consult local agricultural authorities for specific IPM strategies developed for your crop(s) and location.

### **Preharvest interval:**

SPEAR-LEP can be applied up to and including the day of harvest. PHI=0 days

## Application Instructions

As this product is not registered for the control of pests in aquatic systems, DO NOT use to control aquatic pests.

## Spray Drift



Field sprayer application: DO NOT apply during periods of dead calm. Avoid application of this product when winds are gusty. DO NOT apply with spray droplets smaller than the American Society of Agricultural Engineers (ASAE S572.1) fine classification. Boom height must be 60 cm or less above the crop or ground.

Airblast application: DO NOT apply during periods of dead calm. Avoid application of this product when winds are gusty. DO NOT direct spray above plants to be treated. Turn off outward pointing nozzles at row ends and outer rows. DO NOT apply when wind speed is greater than 16 km/h at the application site as measured outside of the treatment area on the upwind side.

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

In combination with a lepidopteran-active Bt product, the active ingredient in SPEAR-LEP largely acts through ingestion.

SPEAR-LEP has no systemic activity, therefore thorough coverage of infested plant parts is necessary for best performance. For some crops, directed drop nozzles by ground machine are required. SPEAR-LEP in combination with Bt is only effective on the immature stages of the listed lepidopteran pests. Younger life stages or earlier instars are more susceptible.

The application rate for all listed crops and targets is 1.2 - 2.3 L of SPEAR-LEP per hectare. For control of lepidopteran larvae (caterpillars, loopers), apply in a tank mix with the low labelled rate of a *Bacillus thuringiensis* (Bt) product containing the subspecies *kurstaki* (Btk), such as Bioprotec, DiPel, Foray 48BA, ReVok<sup>BTK</sup> and Thuricide-HPC, and or products containing the subspecies *aizawai* (Bta), such as XenTari. The Bt product must be registered for the same crop. Repeat applications at 3- to 10-day-intervals depending upon plant growth rate, pest activity and other factors. Application timing recommendations on the Bt tank mix label should be followed if more restrictive. Under heavy pest pressure conditions use the shorter spray interval, the higher rate, and/or increase spray volume to improve spray coverage. Do not make more than three consecutive applications of SPEAR-LEP plus Bt and do not make more than six applications per year.

Adjuvants may be used to achieve uniform plant coverage on plants that are difficult to wet, closed canopy or dense foliage. Use a spreader/sticker or non-ionic surfactant at 0.125% v/v to enhance the adhesion of SPEAR-LEP to the crop.

Apply SPEAR-LEP tank mixes in conventional ground equipment (e.g., boom sprayers, low- or high-volume sprayers or airblast sprayers) with quantities of water sufficient to provide thorough coverage of infested plant parts. The amount of water needed per hectare will depend upon crop development, weather, application equipment and local experience. For orchard crops, apply in a minimum spray volume of 470 L/ha. For other outdoor crops, apply in a minimum spray volume of 187 L/h. Spray volume recommendations on the Bt tank mix label should be followed if the recommended minimum is greater. Do not spray to run off.

## PESTS CONTROLLED BY SPEAR-LEP ON THE FOLLOWING CROPS:

Crop	Insect Pest*
Apple and Pear	Tortricid Moths including Codling Moth, Obliquebanded Leafroller, Oriental Fruit Moth, Tufted Apple Bud Moth
Peach	Oriental Fruit Moth
Brassica Head and Stem (Crop group 5-13); Leafy Greens (Crop group 4-13B)	Cabbage Looper, Diamondback Moth, Imported Cabbageworm
Celery, Tomato, Lettuce, Spinach	Beet Armyworm, Cabbage Looper
Cranberry	Green Spanworm

\*To be used in a tank mix with a Bt product for control of the lepidopteran pests registered on the crop

### **Tank mixing:**

In some cases, tank mixing a pest control product with another pest control product or a fertilizer can result in biological effects that could include, but are not limited to: reduced pest efficacy or increased host crop injury. The user should contact Vestaron Corporation at 919-746-9223 for information before mixing any pesticide or fertilizer that is not specifically recommended on this label.

### **RESISTANCE MANAGEMENT**

For resistance management, SPEAR-LEP contains a Group 32 insecticide. Any insect population may contain individuals naturally resistant to SPEAR-LEP and other Group 32 insecticides. The resistant individuals may dominate the insect population if this group of insecticides is used repeatedly in the same fields. Other resistance mechanisms that are not linked to site of action but are specific for individual chemicals, such as enhanced metabolism, may also exist. Appropriate resistance-management strategies should be followed. To delay insecticide resistance:

- Where possible, rotate the use of SPEAR-LEP or other Group 32 insecticides with different groups that control the same pests.

- Use tank mixtures with insecticides from a different group that is effective on the target pest when such use is permitted.
- Insecticide use should be based on an IPM program that includes scouting and record keeping, and considers cultural, biological and other chemical control practices.
- Monitor treated pest populations for resistance development.
- Contact your local extension specialist or certified crop advisors for any additional pesticide resistance-management and/or IPM recommendations for the specific site and pest problems in your area.
- For further information and to report suspected resistance, contact Vestaron Corporation company representatives at 919-746-9223.

**NOTICE TO USER:**

This pest control product is to be used only in accordance with the directions on the label. It is an offence under the *Pest Control Products Act* to use this product in a way that is inconsistent with the directions on the label.

[Optional Marketing Claims for Container and Booklet]

- {Not for residential use}
- {Requires dilution with water prior to application - see booklet for instructions}
- {Spear® is a registered trademark of Vestaron Corporation}
- {Vestaron name and logo are registered trademarks of Vestaron Corporation}
- {Biological Insecticide}
- {Biological Pesticide}
- {Biological Peptide Insecticide}
- {Biological Peptide Pesticide}
- {{Novel} {Unique} class of pesticides}
- {Known mode of action}
- {Novel} {Unique} mode of action}
- {Peptide-based insecticide}
- {Liquid concentrate - easy to mix}
- {No noxious odour}
- {Storable at room temperature}
- {Zero-day pre-harvest interval}
- {For pre-harvest use}
- {May be sprayed just prior to harvest}
- {May be applied to open blooms}
- {Allowed for use over open bloom}
- {Compatible with integrated pest management practices}
- {Manufactured by fermentation}
- {Contains no live organisms}
- {Contains no organisms}
- {Effective in lower water volume sprays}