



OPEN

GROUP 32 INSECTICIDE

Biological Insecticide/Miticide

Active Ingredient:

GS-omega/kappa-Hctx-Hv1a* 2.0%

Other Ingredients: 98.0%

Total: 100.0%

Contains 0.17 lb active ingredient per gallon

*CAS No. 2307677-15-0

KEEP OUT OF REACH OF CHILDREN CAUTION/PRECAUCION

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

See Inside Booklet for Additional Precautionary Statements and Directions for Use.

FIRST AID

If in eyes	<ul style="list-style-type: none"> • 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.
If on skin or clothing	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15 - 20 minutes. • Call a poison control center or doctor for treatment advice.

HOTLINE NUMBER

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-535-5053 for emergency medical treatment information and chemical emergency assistance.

Manufactured for:

Vestaron Corporation
600 Park Offices Drive, Suite 117
PO Box 13137
Research Triangle Park, NC 27709

EPA Reg. No.: 88847-6
EPA Est. No.: Printed on Container
Made in USA

NET CONTENTS: 1 GALLON (3.78 L)

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals - CAUTION. Causes moderate eye irritation. Harmful if absorbed through skin. Avoid contact with eyes, skin, or clothing. Wear protective eyewear and waterproof gloves. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before reuse.

Personal Protective Equipment (PPE):

Applicators and other handlers must wear:

- long-sleeved shirt and long pants
- waterproof gloves
- shoes plus socks
- protective eyewear

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

Users Should:

Remove clothing/PPE immediately if pesticide get 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.

Environmental Hazards: For terrestrial uses: Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwater 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 State or Tribal agency responsible for pesticide regulation. 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.

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 enter or allow worker entry into treated areas during the Restricted Entry Interval (REI) of 4 hours unless wearing the appropriate personal protective equipment.

Do not enter or allow workers to enter the treated greenhouse or enclosed space until the ventilation requirements in 40 CFR 170.405(b)(3) have been met and the Restricted Entry Interval (REI) of 4 hours has expired. Until then, only handlers wearing the appropriate personal protective equipment can enter the greenhouse or enclosed space.

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
- protective eyewear

PRODUCT INFORMATION

Spear®-T Liquid Concentrate is a biological insecticide and miticide that contains the peptide active ingredient GS-omega/kappa-Hxtx-Hv1a. It is for use on ornamental plants and edible crops as an effective means for controlling pests such as aphids, broad mites, spider mites, thrips and whiteflies, as well as psyllids and spotted-wing drosophila. Spear®-T Liquid Concentrate is a contact insecticide that functions primarily as a central nervous system inhibitor of target pests infesting labeled crops. Spear®-T Liquid Concentrate is mixed with water and applied as a foliar spray.

GENERAL USE INSTRUCTIONS

The active ingredient in Spear®-T Liquid Concentrate largely acts through contact. Spear®-T Liquid Concentrate has no systemic activity, therefore thorough coverage of infested plant parts is necessary for best performance. Small droplet size will improve coverage and penetration of the crop canopy. Use of a non-ionic or blended organosilicone surfactant will also improve coverage.

Spear®-T Liquid Concentrate is effective on immature and adult stages of the listed insect and mite pests. Earlier or younger developmental stages should be considered more susceptible. Careful scouting to detect infestations early is important for optimal results. Repeat applications at 3-10 day intervals (or at intervals necessary to maintain control) depending upon plant growth rate, pest activity and other factors.

Spear®-T Liquid Concentrate may be applied up to and including the day of harvest (Pre-harvest interval = 0 days). Spear®-T Liquid Concentrate has been evaluated for phytotoxicity on a variety of edible and non-edible crops under various normal growing conditions. It is not feasible, however, to test all crop varieties in all mixtures and combinations. Therefore, prior to treating the entire crop, test a small portion of the crop for sensitivity.

Mixing Directions:

Do not add Spear®-T Liquid Concentrate to the mix tank before introducing the desired amount of water. Add water to the mix tank. Start the mechanical or hydraulic agitation to provide moderate circulation before adding Spear®-T Liquid Concentrate. Add the desired volume of Spear®-T Liquid Concentrate to the tank and continue circulation. **Maintain circulation while loading and spraying.** Do not store tank mixes overnight.

Tank Mixing and Compatibility:

Do not combine Spear®-T Liquid Concentrate in the spray tank with other pesticides, surfactants, adjuvants or fertilizers if there has been no previous experience or use of the combination to show it is physically compatible, effective, and non-injurious under your use conditions. Follow the most restrictive of the labeling limitations and precautions of all products used in mixtures.

To ensure compatibility of tank-mix combinations, evaluate prior to use. Use a jar test to determine the physical compatibility of this product with other products. Add the proportionate amounts of the products to one quart of water with agitation. Add dry formulations first, then flowables, then emulsifiable concentrates. After thoroughly mixing, let this mixture stand for 5 minutes. If the combination remains mixed or can be readily remixed, it is physically compatible. Once compatibility has been proven, use the same procedure for adding required ingredients to the spray tank.

When a surfactant is used, add it to the diluted spray solution last. Use the recommended dosage advised in the respective surfactant label to the diluted Spear®-T Liquid Concentrate spray solution and mix thoroughly by agitation to prepare the spray solution for application.

Integrated Pest Management (IPM):

Spear®-T Liquid Concentrate is an important tool for sound pest management whenever pesticide use is necessary. Because the active ingredient has a novel mode of action, Spear®-T Liquid Concentrate provides a new control method for the labeled pests. It effectively targets immature and adult life stages. Based on sound scouting practices, use Spear®-T Liquid Concentrate preventively to avoid infestations, as a spot spray to suppress localized infestations, or as a blanket spray to prevent outbreaks. Applying Spear®-T Liquid Concentrate in rotation with other insecticides as a part of a resistance management program will reduce inputs of conventional insecticides and may also delay development of pesticide resistance. Based on a variety of evaluations, Spear®-T Liquid Concentrate is not disruptive to the benefits of biological control agents or other non-target species. It is not feasible, however, to test all species of beneficials in all situations. Therefore, 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 IPM strategies that are specific to your crop and location.

Resistance Management:

Spear®-T Liquid Concentrate contains the biological peptide GS-omega/kappa-Hctx-Hv1a, which is a Group 32 Insecticide and is not known to be cross-resistant with any other class of insecticide. Repeated use of any mode of action, however, has the potential for pests to develop insecticide resistance. To delay development of resistance, the following practices are recommended:

- Carefully follow the specific guidelines within the use directions.
- Avoid using the same active ingredient or mode of action on consecutive generations of insects. Multiple applications to reduce a single generation, however, are acceptable. Treat the next generation with a different mode of action.
- Avoid using less than labeled rates of any insecticide when applied alone.
- Target the insect early in development to achieve the greatest benefit from the insecticide.
- Consult local agricultural authorities for specific IPM strategies developed for your crop(s) and location.

AERIAL DRIFT REDUCTION ADVISORY INFORMATION

General:

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment and weather-related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions. Where states have more stringent regulations, they should be observed. Note: This section is advisory in nature and does not supersede the mandatory label requirements.

Boom Width:

For aerial applications, the boom width must not exceed 75% of the wingspan or 90% of the rotary blade. Use upwind swath displacement and apply only when wind speed is 3-10 mph as measured by an anemometer. Use medium or coarser spray according to ASAE 572 definition for standard nozzles or VMD for spinning atomizer nozzles. If application includes a no-spray zone, do not release spray at a height greater than 10 feet above the ground or crop canopy.

Application Height:

Do not make aerial application at a height greater than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces exposure of droplets to evaporation and wind.

Swath Adjustment:

When applications are made with a crosswind, the swath will be displaced downward. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase, with increasing drift potential (higher wind, smaller drops, etc.).

Wind:

Drift potential is lowest between wind speeds of 2-10 mph. However, many factors, including droplet size and equipment type determine drift potential at any given speed. Application should be avoided below 2 mph due to variable wind direction and high inversion potential. NOTE: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

Temperature Inversions:

Do not apply during a temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small, suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

Sensitive Areas:

The pesticide should only be applied when the potential for drift to adjacent sensitive areas (e.g. residential areas, bodies of water, known habitat for threatened or endangered species, non-target crops) is minimal (e.g. when wind is blowing away from the sensitive areas). Do not allow spray to drift from the application site and contact people, structures people occupy at any time and the associated property, parks and recreation areas, non-target crops, aquatic and wetland areas, woodlands, pastures, rangelands, or animals.

APPLICATION INSTRUCTIONS

GREENHOUSE AND NURSERY USE DIRECTIONS

Spear®-T Liquid Concentrate may be used in greenhouses (including high tunnels, lath and shadehouses, interiorscapes and hoop houses) and nurseries. Make applications with high pressure, low-volume or ultra-low-volume spraying and fogging equipment. Spear®-T Liquid Concentrate is a contact insecticide so direct contact with the pest is essential for optimum performance. Better coverage and penetration of crop canopy is usually achieved when smaller spray droplets are applied. Use fine or very fine nozzles and preferably apply high pressure if hydraulic sprayer is used. Use of a non-ionic or blended organosilicone surfactant to improve coverage may increase performance.

For high-volume sprayers, mix 1-3 gallons of Spear®-T Liquid Concentrate with water to a total volume of 100 gallons to prepare a 1-3% product solution. Apply as a foliar spray in enough volume per acre to achieve full coverage of the target crop (50-100 gallons of this spray solution are generally sufficient to treat 1 acre). For low-volume and ultra-low-volume equipment, apply 1-3 gallons of Spear®-T Liquid Concentrate per acre. Follow the equipment manufacturer instructions carefully to determine the appropriate amount of water and/or carrier for area coverage. Repeat applications at 3-10-day intervals depending upon plant growth rate, pest activity and other factors.

DIPPING OR IMMERSION TREATMENTS

Spear®-T Liquid Concentrate may be applied using a pre-plant dipping application to vegetative or hardwood unrooted cuttings and transplants for control of labeled pests. To prepare the dipping solution, thoroughly mix 1 gallon of Spear®-T Liquid Concentrate with 9 gallons of water for a 10% product solution. If plant sensitivity is a concern, this concentration may be reduced to 1 gallon of Spear®-T Liquid Concentrate with 19 gallons of water for a 5% solution. Prior to treating the entire crop, test a small portion of the crop for sensitivity. Use caution when dipping geranium, petunia and salvia cuttings because some cultivars may be sensitive.

For unrooted cuttings, place into the tank loose, or in a mesh bag or immersion tray with top. To maximize coverage, do not pack cuttings too tightly. Immerse the cuttings into the Spear®-T Liquid Concentrate solution, and gently move the plants around for 5-10 seconds, or just long enough to completely wet all surfaces. Verify that there are no dry surface areas.

For bare-root transplants, hold by the roots and immerse in the Spear®-T Liquid Concentrate solution. Gently move around for 5-10 seconds, or just long enough to completely wet all surfaces of the leaves and stems, but not the roots. Verify that there are no dry surface areas.

For plugs and liners, turn the tray upside down, when practical, and dip the plant tops (stems and foliage) into the Spear®-T Liquid Concentrate solution. Gently move around for 5-10 seconds, or just long enough to wet all surfaces.

Once cuttings and transplants are removed from the dipping solution, plant into potting mix or soil in the usual manner. Allow treated plants to dry before misting or watering. Observe the following general guidelines:

- Clean and disinfect the dipping tank and equipment before a new dip solution is prepared.
- Prepare only as much dip solution as can be used in one day. Do not use dip solution for more than one day.
- Prior to treating a new crop, test a small number of plants for sensitivity. Immerse in dipping solution, plant into growing media, and observe over several days for plant damage. Do not use dipping if there is any visible damage to test plants.
- If plant pathogens are a concern, prepare a new dipping solution regularly.
- Submerge just long enough to wet all plant surfaces.
- Agitate dip solution throughout use.
- Do not immerse stressed or wilted cuttings or transplants.

**USE SPEAR®-T LIQUID CONCENTRATE ON THE FOLLOWING CROPS:
GREENHOUSE AND NURSERY USES**

Insect/Mite Pests
Aphids , such as: Green Peach Aphid, Cotton/Melon Aphid Plant-feeding Mites , such as: Broad Mite, Lewis Mite, Twospotted Spider Mite Spotted-wing Drosophila Thrips , such as: Onion Thrips, Tobacco Thrips, Western Flower Thrips Whiteflies , such as: Greenhouse Whitefly, Sweetpotato Whitefly
Crops
Greenhouse Vegetables: Vegetable, Root and Tuber (Group 1) , such as: Beet, Carrot, Potato, Radish, Sugarbeet Vegetable, Bulb (Group 3) , such as: Garlic, Leek, Onion (Green and Bulb) Vegetable, Leafy Except Brassica (Group 4) , such as: Celery, Endive, Lettuce, Parsley, Spinach Vegetable, Brassica Leafy (Group 5) , such as: Broccoli, Brussels Sprouts, Cabbage, Cauliflower, Chinese Cabbage, Collards, Kale, Kohlrabi, Mustard Greens Vegetable, Legume (Group 6) , such as: Bean, Lentil, Pea, Soybean Vegetable, Fruiting (Group 8) , such as: Eggplant, Pepper, Tomato Vegetable, Cucurbit (Group 9) , such as: Cucumber, Melon, Squash, Watermelon
Greenhouse/Nursery Flowers and Ornamental Plants , such as: Bedding Plants, Container Stock, Cut Flowers, Ornamental Flowers, Ornamental Plants
Greenhouse Herbs and Mint (Group 25) , such as: Basil, Chive, Cilantro, Dill, Mint, Parsley, Rosemary, Sage, Thyme
Greenhouse Fruit Fruit, Citrus (Group 10) , such as: Grapefruit, Lemon, Lime Fruit, Stone (Group 12) , such as: Cherry, Nectarine, Peach, Plum, Prune Berry (Group 13) , such as: Blackberry, Blueberry, Grape, Raspberry, Strawberry
Hemp and Tobacco

FIELD USE DIRECTIONS FOR FRUITS AND VEGETABLES: Use high pressure for application of the spray solution. Apply 1-3 gallons of Spear®-T Liquid Concentrate per acre. Better coverage and penetration of crop canopy is usually achieved when smaller spray droplets are applied. Use very fine nozzles to create a fine spray mist. Use of a nonionic or blended organosilicone surfactant at 0.125% (v/v) to improve coverage may increase performance. Repeat applications at 3-10-day intervals depending upon plant growth rate, pest activity and other factors.

FIELD USES

Crops	Insect/Mite Pests
<p>Field Vegetables:</p> <p>Vegetable, Root and Tuber (Group 1), such as: Beet, Carrot, Potato, Radish, Sugarbeet</p> <p>Vegetable, Bulb (Group 3), such as: Garlic, Leek, Onion (Green and Bulb)</p> <p>Vegetable, Leafy Except Brassica (Group 4), such as: Celery, Endive, Lettuce, Parsley, Spinach</p> <p>Vegetable, Brassica Leafy (Group 5), such as: Broccoli, Brussels Sprouts, Cabbage, Cauliflower, Chinese Cabbage, Collards, Kale, Kohlrabi, Mustard Greens</p> <p>Vegetable, Legume (Group 6), such as: Bean, Lentil, Pea, Soybean</p> <p>Vegetable, Fruiting (Group 8), such as: Eggplant, Pepper, Tomato</p> <p>Vegetable, Cucurbit (Group 9), such as: Cucumber, Melon, Squash, Watermelon</p>	<p>Plant-feeding Mites, such as: Broad Mite, Lewis Mite, Twospotted Spider Mite</p> <p>Psyllids, such as: Potato Psyllid</p> <p>Thrips, such as: Onion Thrips, Tobacco Thrips, Western Flower Thrips</p> <p>Whiteflies, such as: Sweetpotato Whitefly</p>
<p>Field Fruit and Berries:</p> <p>Fruit, Citrus (Group 10), such as: Grapefruit, Lemon, Lime, Orange</p> <p>Fruit, Pome (Group 11), such as: Apple, Pear</p> <p>Fruit, Stone (Group 12), such as: Cherry, Nectarine, Peach, Plum, Prune</p> <p>Berry (Group 13), such as: Blackberry, Blueberry, Grape, Raspberry, Strawberry</p>	<p>Plant-feeding Mites, such as: Broad Mite, Citrus, Rust Mite, Twospotted Spider Mite</p> <p>Psyllids, such as: Asian Citrus Psyllid, Pear Psylla</p> <p>Spotted-wing Drosophila</p> <p>Thrips, such as: Western Flower Thrips</p>
<p>Tree Nuts (Group 14-12)</p>	<p>Plant-feeding Mites, such as: Broad Mite, Twospotted Spider Mite</p>
<p>Hemp</p>	<p>Aphids, such as: Cotton/Melon Aphid, Green Peach Aphid</p> <p>Plant-feeding Mites, such as: Broad Mite, Twospotted Spider Mite</p> <p>Thrips, such as: Onion Thrips, Tobacco Thrips, Western Flower Thrips</p>
<p>Hops</p>	<p>Plant-feeding Mites, such as: Broad Mite, Lewis Mite, Twospotted Spider Mite</p>
<p>Tobacco</p>	<p>Aphids, such as: Green Peach Aphid</p> <p>Thrips, such as: Tobacco Thrips</p>

STORAGE AND DISPOSAL

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

Pesticide Storage: Store unopened container at room temperature. Do not store product in an open/unsealed container. Discard any remaining product after use. Do not allow product to freeze.

Pesticide Disposal: Discard any remaining product after use on site, or send to a waste disposal facility or pesticide disposal program.

Container Handling: [For containers less than or equal to 5 gallons:] Nonrefillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available, or puncture and dispose of in a sanitary landfill or by incineration.

[For containers greater than 5 gallons:] Nonrefillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ full with water. Replace and tighten enclosures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Then offer for recycling if available, or puncture and dispose of in a sanitary landfill or by incineration.

TERMS AND CONDITIONS OF USE

If the terms of the following WARRANTY DISCLAIMER, INHERENT RISKS OF USE, and LIMITATION OF REMEDIES are not acceptable, return the unopened package at once to Vestaron Corporation. Otherwise, use of the product will constitute acceptance of the terms under WARRANTY DISCLAIMER, INHERENT RISKS OF USE and LIMITATION OF REMEDIES.

WARRANTY DISCLAIMER

TO THE EXTENT PERMITTED BY APPLICABLE LAW, VESTARON CORPORATION MAKES NO WARRANTY, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS OR OTHERWISE CONCERNING USE OF THE PRODUCT.

INHERENT RISKS OF USE

It is impossible to eliminate all risks associated with use of the product. Crop injury, lack of performance, or other unintended consequences may result because of such factors as use, storage or product handling not in accordance with the accompanying label instructions, abnormal conditions, presence of other materials, or other factors, all of which are beyond the control of Vestaron Corporation. All such risks shall be assumed by the user.

LIMITATION OF REMEDIES

To the extent permitted by applicable law, the exclusive remedy for losses or damages resulting from the product (including claims based on contract, negligence, strict liability, or other legal theories) shall be limited to replacement of the amount of product used. To the extent permitted by applicable law, Vestaron Corporation disclaims any liability for incidental, consequential, exemplary, special or indirect damages resulting from the use, storage or handling of the product.

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