

VEGETABLE AND COLE CROPS, FIELD CROPS, FRUITS, NUTS, ORNAMENTAL PLANTS, GREENHOUSE AND OUTDOOR NURSERY CROPS, ETC.

General Information

PRODUCT INFORMATION

Spear-Lep is a biological insecticide that contains the peptide active ingredient GS-omega/kappa-Hxtx-Hv1a. It is for use on ornamental plants and edible crops. To be effective against the labelled lepidopteran and coleopteran pests, Spear-Lep must be tank mixed with *Bacillus thuringiensis* (Bt) products or another product that assists in moving the active ingredient to the site of activity. When ingested at labelled rates along with Bt, Spear-Lep functions as a central nervous system inhibitor. Spear-Lep is mixed with water and applied as a foliar spray with ground or aerial equipment equipped for conventional insecticide spraying.

Spear-Lep tank mixes with Bt products can be used in either the field or greenhouse.

USE INSTRUCTIONS

In combination with Bt, 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 should be considered more susceptible.

The application rate for all listed crops and targets is 1-2 pints per acre. Repeat applications at 3-10-day intervals (or at intervals necessary to maintain control) depending upon plant growth rate, pest activity and other factors. Under heavy pest pressure conditions, shorten the spray interval,

use a higher rate, and/or increase spray volume to improve spray coverage. Do not spray to run off.

Spear-Lep may be applied up to and including the day of harvest (Pre-harvest interval = 0 days).

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 an adjuvant that has been approved for the targeted crop use to enhance the adhesion of Spear-Lep to the crop.

Spear-Lep 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.

Use Restrictions:

Do not apply this product through any type of irrigation.

For outdoor field use, do not apply more than 10 gallons of Spear-Lep per acre per year.

Integrated Pest Management (IPM):

Spear-Lep is an important tool for sound pest management whenever pesticide use is necessary. Because the active ingredient has a novel mode of action, Spear-Lep provides a new control method for the labelled pests. Based on sound scouting practices, use Spear-Lep preventively to avoid infestations, as a spot spray to suppress localized infestations, or as a blanket spray to prevent outbreaks. Applying Spear-Lep in rotation with other insecticides will reduce inputs of conventional insecticides and also delay development of pesticide resistance. Based on a variety of evaluations, Spear-Lep 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-Lep contains the biological peptide GS-omega/kappa-Hxtx-Hv1a, which has a

novel mode of action. It is classified as a Group 32 Insecticide and is not known to be cross-resistant to any other class of insecticide. Repeated use of any mode of action, however, has the potential for pests to develop resistance. To delay development of insecticide 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 in early 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 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.

Limitations, Restrictions, and Exceptions

APPLICATION RATES AND VOLUMES

For all listed crops, apply 1-2 pints of Spear-Lep per acre for all listed pests. Best performance depends on thorough coverage. Use a minimum of 20 gallons for ground applications and 5 gallons for aerial applications. Do not spray to runoff.

Colorado Potato Beetle

- Apply in a tank mix with the low labelled rate of a beetle active Bt, such as Bt ssp. tenebrionis

Lepidopteran Larvae (caterpillars, loopers, "worms")

- Apply in a tank mix with the low labelled rate of a lepidopteran active Bt, such as Bt ssp. kurstaki

Method

[Broadcast/Foliar Air](#)

[Broadcast/Foliar Ground](#)

Pre-Harvest Interval

0 day

Restricted Entry Interval

4 hours

Timings

[N.A.](#)