Spear®-Lep is Vestaron’s revolutionary bioinsecticide for pome and stone fruit, tree nuts, vegetables and other high-value field and orchard crops. Targeting lepidopteran pests such as loopers, worms and caterpillars, field trials with Spear-Lep show performance that is equal or superior to conventional insecticides. With no known resistance or cross-resistance, Spear-Lep works as a standalone, or in rotation with conventional insecticides as an excellent IPM and resistance management tool.

**REVOLUTIONARY CONTROL**

- ALMOND
- APPLE
- BLUEBERRY
- CHERRY
- CRANBERRY
- GRAPES
- HAZELNUT
- HOPS
- PEAR
- POTATO
- STONE FRUIT
- STRAWBERRY
- TOMATO
- VEGETABLES

**KEY FACTS**

- Bioinsecticide based on a naturally occurring peptide
- Highly specific for lepidopterans with very low risk to beneficials
- Control that equals or surpasses conventional options
- Vital new tool for sustainable pest management
- New IRAC group 32 supporting resistance management
- Spear-Lep is effective when tank-mixed with its synergist, *Bacillus thuringiensis* (Btk)
- Excellent environmental and worker safety profile
- Zero-day PHI, 4-hour REI, MRL exempt
- Mode of entry - ingestion
- Mode of action - disruption of the nicotinic acetylcholine receptor
- Low risk of phytotoxicity
- Registered in all 50 states

**A SOLUTION BY VESTARON**

Vestaron is a company dedicated to improving the safety, efficacy and sustainability of crop protection through migration from synthetic pesticides to peptide-based biopesticides. Vestaron is initially focused on a class of peptides that kills insects, but is safe for humans, beneficial insects and the environment. As part of this focus, the company has developed a proprietary platform for peptide optimization and fermentation-based peptide production that will allow the development of a wide variety of biological crop protection solutions. Vestaron has earned global recognition for its work, including the inaugural 2015 Bernard Blum Award for novel biocontrol solutions, a ranking in the 2020 THRIVE Top 50 list of AGTECH Growth Stage Companies, and the prestigious Green Chemistry Challenge Award from the U.S. Environmental Protection Agency and the American Chemical Society Green Chemistry Institute in 2020.

**QUICK INFO**

- EPA REG #: 88847-6
- AI FORMULATION: GS-OMEGA/KAPPA-HXTX-HV1A
- IRAC GROUP: LIQUID
- SIGNAL WORD: CAUTION
- REI: 4 HRS
- PHI: 0 DAYS
- PACKAGE SIZE: 1 GAL, 4 X 1 GAL CASE
- USE RATE: 1-2 PT/ACRE PLUS Bt
- RAINFAST: 4 HOURS
- SURFACTANT: For best performance, use with a NIS or spreader/sticker at 0.125% v/v

**POME FRUIT AND OTHER**

(see label for full list)

- ● ALMOND
- ● APPLE
- ● BLUEBERRY
- ● CHERRY
- ● CRANBERRY
- ● GRAPES
- ● HAZELNUT
- ● HOPS
- ● PEAR
- ● POTATO
- ● STONE FRUIT
- ● STRAWBERRY
- ● TOMATO
- ● VEGETABLES

**THE POWER OF SYNTHETICS. THE SAFETY AND SUSTAINABILITY OF BIOLOGICALS.**
TRIALIST:
- Michigan State University (Dr. Larry Gut), 2017
- LABServices (James Steffel), PA, 2019

DESIGN:
- Leaf disc bioassay
- 10-18 replications
- 10 first instars per replication

TREATMENTS:
- Untreated check: water only
- Spear-Lep: Spear-Lep (4.76 mL) and Leprotec (Bt ssp. kurstaki, 3.75 mL) in 1 L water
- Conventional: Delegate 25WG (spinetoram, 1.09 mL) in 1 L water

APPLICATIONS:
- Single exposure leaf dip into treatment solutions
- Larval survival assessed at 48 hr

RESULTS SUMMARY:
- Spear-Lep/Leprotec is active against four of the major lepidopteran pests of apples
- Within 48 hr, 46-72% of larvae were killed after feeding on leaves dipped into Spear-Lep/Leprotec spray solution, compared to 89-100% for the conventional standard
- Mortality from the conventional standard was numerically higher than Spear-Lep/Leprotec for all four species, but not statistically different for Codling Moth and Oblique-banded Leafroller

TRIALIST:
- Outdoor orchard trial
- RCBD, 4 replications
- Single-tree plots with unsprayed border trees

TREATMENTS:
- Untreated check: water only
- Spear-Lep at low and high label rates, each with a matching volume of Leprotec (Bt ssp. kurstaki)
- Spear-Lep rotation: Spear-Lep/Leprotec (2/1 pt/A) rotated with Altacor (chlorantraniliprole, 3.5 oz wt/A)
- Conventional rotation: Assail (acetamiprid, 8 oz wt/A) rotated with Altacor (chlorantraniliprole) (4.0 oz wt/A)
- All treatments included NIS (Induce and LI-700)

APPLICATIONS:
- May 7, 22; Jun 5, 22; Jul 5, 19; Aug 2, 16
- Insects rated mid-season (Jul 25) and end-season (Sep 6)

RESULTS SUMMARY:
- Spear-Lep/Leprotec was highly effective at controlling internal damage caused by Codling Moth and Oriental Fruit Moth in apples
- Protection from fruit entries was equivalent to the conventional rotation
  - For both rates of Spear-Lep/Leprotec used as season long standalone
  - When Spear-Lep/Leprotec replaced Assail (acetamiprid) in the rotation
- With respect to fruit entries, Spear-Lep can replace Assail in a season-long rotation program for Codling Moth and Oriental Fruit Moth.
- Spear-Lep brings a new IRAC group to your resistance management program, and it has the versatility and efficacy to fit your rotation