



4 SIGMA
INNOVATIONS LLC

Hello and thank you for taking time to learn about our product.

4 SIGMA Innovations LLC is a self-funded small business that relies on USA manufacturing to the greatest extent possible. Our products may seem unusual because they were designed to address problems using an “outside of the box” approach.

The Spotted Lanternfly Barrier Strip is an effective and environmentally friendly alternative to competing products that may harm wildlife and/or the environment in general.

Your thoughts, ratings, and online reviews are extremely important in helping us learn and grow.

Please read further to learn more about the Spotted Lanternfly Barrier Strip, how it works, how it is easily installed and maintained, and how it can outperform the competition when used against red nymphs through egg-laying adults.

Thank you very much for your interest and consideration!

Sincerely,

Mike

Owner/Innovator
4 SIGMA Innovations LLC
sf@4sigmallc.com



Spotted Lanternfly Barrier Strip

Product Overview:

The Spotted Lanternfly Barrier Strip is an innovative pesticide device that keeps lanternflies and their egg masses within easy reach. Safe for birds, butterflies, bees, humans, and ground water. Best used on spotted lanternflies from red nymphs through egg laying adults.

Product consists of a reusable plastic barrier and an absorbent cotton wick; both items are 12 feet long. Product also includes complimentary nano-adhesive double-sided attachment pads, zip ties, and an application bottle for easy installation and maintenance.

The plastic barrier strip has a smooth surface that is slick enough to prevent many pests from climbing across when used by itself. The barrier strip includes overhanging “petals” that prevents trunk-climbing pests from jumping or flying across from the trunk below. The absorbent cotton wick provides a source for Olive oil or USP-grade mineral oil from your local pharmacy (not provided).

As the lanternfly climbs onto the wick, saturated with Olive oil or USP mineral oil, the oil adheres to pests claws and prevents them from gripping the slick plastic barrier strip so they cannot climb out-of-reach.

Olive contains oleic acid, an 18-chain carbon fatty acid, that is present in olive oil and other vegetable oils and is very effective as an insecticidal soap.

<https://blogs.k-state.edu/kansasbugs/2020/06/12/fundamentals-of-using-soaps-as-insecticides/>

USP mineral oil may be laced with concentrated Insecticidal Soap at a 50:1 ratio to potentially kill lanternflies while you are away. Organic pesticide spray products such as Insecticidal Soap or Pyrethrin may also be used to control lanternflies on or below the barrier strip.

Reapply the Olive oil or USP mineral oil about once a week to keep the wick saturated for best results. Dead and dying pests fall to the ground and decompose.

Eliminates by-catch of native wildlife. Eliminates the need to replace gross and messy sticky tape filled with dead bugs that become stepping stones for other lanternflies climb across. Eliminates the need to replace bags of squirming insects. Eliminates the need for chemical pesticides that may affect pollinators and/or pollute ground water.

USP grade mineral oil is an inexpensive, ingestible product that is used in a wide array of health-related applications and readily available from your local pharmacy. USP mineral oil (EPA CAS no. 8012-95-1) is labeled as inert ingredient that may be used with FIFRA 25(b) minimum risk pesticides.

Horticultural spray oil concentrate is based on mineral oil and widely used in organic farming. However, the additives in horticultural spray oil concentrate that allow it to be mixed with water would also allow the spray oil to be washed from the absorbent wick during heavy rains. Ready-to-Use (RTU) pesticide products are ~98% water and also not recommended for saturating the.

4 SIGMA Innovations LLC does not recommend and is not liable for the use, mis-use or application of chemical pesticide products (e.g., dinotefuran, bifenthrin) on or below our barrier strip.

4 SIGMA Innovations is a micro-business that relies on USA manufacturing to produce our products. Complimentary items provided with this product are procured through a third party.



4 SIGMA
INNOVATIONS LLC



Installation Instructions:

Attach the Barrier Strip

Select a smooth straight section of the trunk within easy reach.

Align the barrier strip so that the petals are along the top.

1) Attach a double-sided sticky block about four inches from the end of the strip

Attach a strip of duct tape to the end of the plastic strip and then attach to the tree where desired.

2) Wrap the tree with the plastic strip, pull the plastic strip tight and press the strip firmly onto the double-sided sticky block in a repeated circular motion.

Cut the plastic strip to length and tuck all loose ends into the strip underneath.

Note: If the tree bark is very rough, a strip of polyester furniture batting may be wrapped around the tree prior to product installation to keep pests from crawling underneath.

3) Wrap the wick around the plastic strip, align wick along the bottom edge, pull wick tight, fasten the two ends together with a zip-tie, and cut to length.

4) Place a generous bead of Olive Oil from your pantry or USP grade mineral oil from your medicine cabinet along the top of the wick. Allow the oil to be absorbed and reapply until the wick appears saturated and oily to the touch.

Note: Potassium Salts of Fatty Acid (Insecticidal Soap) has been proven effective against lanternflies with negligible environmental impacts.

<https://extension.psu.edu/spotted-lanternfly-management-guide>

Olive contains oleic acid, an 18-chain carbon fatty acid, that is present in olive oil and other vegetable oils and is very effective as an insecticidal soap.

<https://blogs.k-state.edu/kansasbugs/2020/06/12/fundamentals-of-using-soaps-as-insecticides/>

USP mineral oil may be laced with concentrated insecticidal soap per product instructions (~50:1 ratio).

The insecticidal soap oils recommended above may yield better results than mineral oil alone by accumulating on the pest's abdomen, disrupting cell membranes, and causing the pest to die of dehydration.

Note: DO NOT use "Ready-to-Use" (RTU) horticultural oil to saturate the wick. That product is ~98% water, will dry-out quickly, and fail to work as needed.

Replenish Wick with Oil

Periodically apply additional oil (about once a week) to keep the wick saturated for best results.

Note: Oil stains on the bark from the lanternfly's claws and replenishing the wick are not harmful to the tree.


End of Current Season

In early Winter, remove and discard the cotton wick. Wipe the plastic strip clean with soap and water, coil the plastic strip, secure with a rubber band, and store in the shipping container provided.





4 SIGMA
INNOVATIONS LLC

 4 SIGMA Innovations LLC does not recommend and is not liable for the use, mis-use or application of chemical pesticide products (e.g., dinotefuran, bifenthrin) on or below our barrier strip. We do recommend organic pesticide products such as Insecticidal Soap or Pyrethrin spray in accordance with the manufacturers' instructions.



Spotted Lanternfly Tree Barrier Strip FAQs:

[Why use a barrier strip?](#)

[What does this product consist of?](#)

[How does it differ from other products?](#)

[How is it more environmentally friendly than other products?](#)

[How does it work?](#)

[How often does it need to be maintained?](#)

[Where is this product best used?](#)

[When is this product best used?](#)

[How can I fill gaps underneath the barrier strip?](#)

[Why does the product need to be removed at the end of the season?](#)

[Does this product kill lanternflies?](#)

Horticultural Oils

[What are Minimum Risk Pesticides and Biopesticides?](#)

[What are horticultural oils?](#)

[Should I be concerned about phytotoxicity?](#)

Alternative Applications

[Can chemical pesticides be used with your product?](#)

[Can I use mineral oil with your product?](#)

[Can I use essential oils with your product?](#)

[Can I use neem oil with your product?](#)

[Where else can your product be used other than trees?](#)

Product Reviews and Updates

[Customer Reviews and Citizen Scientists](#)

[Product Updates](#)

Pennsylvania Department of Agriculture and EPA

[Is your product a registered pesticide device?](#)



Why use a barrier strip?

Lanternflies instinctively climb tall trees to feed, mate, lay eggs, and launch themselves toward their intended target such as a vineyard or a distant tree. Our product keeps lanternflies below the point of application and within arm's reach so they are more easily and safely controlled. [Back to FAQs](#)

What does this product consist of?

This product consists of a reusable plastic barrier strip and a biodegradable absorbent cotton wick. Both are 12' long; enough for 2 to 4 mature trees. Replacement wicks are available for purchase separately. [Back to FAQs](#)

How does it differ from other products?

Sticky tape is messy to apply and replace while it becomes less effective as captured bugs become stepping stones for newcomers to walk across. Collection bags are unsightly and smelly when filled. Both products are gross to replace. In comparison, the Spotted Lanternfly Tree Barrier Strip is easy to attach, easy to maintain and it works continuously with minimal upkeep while dead lanternflies simply fall to the ground. [Back to FAQs](#)

How is it more environmentally friendly than other products?

Sticky tape is notorious for the by-catch of native birds and animals and requires protective wire mesh for safe use. Pesticides provide quick-kill satisfaction but are often over-used or mis-used, resulting in negative impacts to pollinators and the surrounding environment.

In comparison, our product's plastic barrier strip is reusable for many years when cut long enough to allow for future tree girth growth. At the end of the season, the plastic strip should be removed, cleaned and coiled properly so it maintains its shape until the next use. The replaceable absorbent wick is made of biodegradable cotton that will not harm the environment when used as directed. Finally, our product does not pose any threat to native wildlife or pollinators. [Back to FAQs](#)

How does it work?

The Spotted Lanternfly Tree Barrier Strip is made of slick plastic that nymphs through egg-laying adults cannot cross. The overhanging petals provide additional benefits such as:

- 1) Prevents adult lanternflies from climbing any further
- 2) Forces lanternflies to jump away from the trunk instead of across the barrier strip
- 3) Protects the absorbent wick from wash-out due to heavy rain

The absorbent wick provides a source for Olive oil from your pantry or USP grade mineral oil from your local pharmacy (not provided) that clings to the lanternfly's claws and enhances the effectiveness of the barrier strip against adult lanternflies with fully developed claws.

Together, the plastic barrier strip and the oil-absorbent wick are very effective at keeping lanternflies and their egg masses below the point of installation. [Back to FAQs](#)



How often does it need to be maintained?

The Spotted Lanternfly Tree Barrier Strip is most effective when the wick is kept nearly saturated with Olive oil or USP mineral oil. Check the wick once a week to make sure it continues to glisten. Add a bead of oil along the top of the wick when it becomes dry in appearance or to the touch. [Back to FAQs](#)

Where is this product best used?

The Spotted Lanternfly Barrier Strip is best used on isolated trees that Lanternflies climb to launch themselves toward more distant areas, trees that are susceptible to heavy feeding (tree-of-heaven, birch, maple, willow, etc.) and trees with many egg masses from the previous season as they will likely be targeted again. [Back to FAQs](#)

When is this product best used?

The Spotted Lanternfly Barrier Strip is most effective with late-stage nymphs through fully grown adults that quickly clog sticky tape and fill collection bags. The lanternfly's life-cycle may be viewed on the [Cornell University College of Agriculture and Life Sciences web page](#). [Back to FAQs](#)

How can I fill in the gaps below the barrier strip?

For trees with deeply grooved bark, polyester batting may be cut into one-to-two-inch-wide strips and placed underneath the barrier strip during installation. Polyester batting is breathable and will allow the bark to dry after rainstorms.

For trees with uneven trunks like silver maple, we recommend either applying our barrier strip to the individual branches above the main trunk or stapling the barrier strip into the indentation before wrapping the rest of the trunk. [Back to FAQs](#)

Why does the product need to be removed at the end of the season?

Debris that accumulates behind the barrier strip results in a moist environment underneath the barrier strip. Although the Spotted Lanternfly Barrier Strip is only 1" wide compared to 4" sticky tape, there may still be enough moisture to create a home for unwanted pests that may cause damage to the bark and the tree if not removed at the end of the season. [Back to FAQs](#)

Does this product kill the Spotted Lanternfly?

Our product does not kill lanternflies by itself. However, the USP mineral oil applied to the absorbent wick may accumulate on the lanternfly's body, clog their breathing holes and suffocate it death (see "What are horticultural oils" for more information). [Back to FAQs](#)

What are horticultural oils?

Horticultural oils work by clogging the pest's breathing system, destroying the waxy coating on their bodies, interfering with feeding and/or interfering with reproduction. Different horticulture oils act in different ways and may even act differently from pest to pest. The [Using Oils as Pesticides](#) article on the Texas A&M AgriLife Extension website is one of many helpful and credible resources on the internet to learn more.

Petroleum-based products such as mineral oil are most commonly used in horticultural spray oils because they do not go rancid or support microorganisms like plant-based oils do.

Plant-based commercial horticultural oils include soybean, cottonseed, canola and neem. Plant oils break down when their fat content is exposed to air, light and heat. Plant oils with a high percentage of poly-unsaturated fats such as soybean become rancid most quickly. Additionally, plant-based oils tend to become tacky and lose their effectiveness. [Back to FAQs](#)



Should I be worried about phytotoxicity with your product?

No, you do not need to be concerned with the USP mineral oil applied to the absorbent wick. Phytotoxicity occurs when unrefined horticultural oils are applied directly to plant foliage (leaves) under adverse conditions such as high heat and humidity. Symptoms of phytotoxicity include speckled, yellowing, browning and twisted foliage that occurs in response to the oil on the leaf's surface.

However, when using the Spotted Lanternfly Barrier Strip the oil is confined to the absorbent wick where it only contacts the thick protective tree bark. Please note that stains may occur on the bark as oil is transferred from the lanternfly's claws, but the tree will be unharmed. [Back to FAQs](#)

Can chemical pesticides be used with your product?

4 SIGMA Innovations LLC is committed to developing an environmentally friendly product that works effectively without the use of chemical pesticides such as bifenthrin. 4 SIGMA Innovations LLC is not liable for the use, mis-use or application of chemical pesticide products nor are we liable for the mis-use or misapplication of our product. [Back to FAQs](#)

Can I use essential oils with your product?

Essential oils are largely exempted from FIFRA registration as Minimum Risk Pesticides. Some essential oils have been found to affect insect nerve receptors enough to kill them instantly. However, we pass on recommending essential oils because many degrade quickly and no data exists on how effective they are at controlling lanternflies.

Please follow us on Facebook [@SLFbarrierstrip](#) for updates to the recommended list of commercially available pesticide products to us. [Back to FAQs](#)

Can I use neem oil with your product?

Neem oil is a biodegradable product that is derived from the neem tree (*Azadirachta indica*) and is widely used in organic gardening. The EPA lists neem oil as a bioinsecticide while the National Pesticide Center states that [Neem oil works](#) by acting as an antifeedant and it interferes with the insect's hormone system making it harder for it to grow and lay eggs. However, we pass on recommending neem oil because it degrades quickly and can become smelly.

Please follow us on Facebook [@SLFbarrierstrip](#) for updates to the recommended list of commercially available pesticide products to us. [Back to FAQs](#)

Where else can your product be used other than trees?

The Spotted Lanternfly Barrier Strip may be used anywhere that you can create a continuous barrier where lanternflies cannot find a gap to pass through. In addition to tree trunks, the product may be applied to light posts and telephone poles that lanternflies climb to launch themselves across long distances. [Back to FAQs](#)

Customer Reviews and Citizen Scientists:

Customers are encouraged to contribute as citizen scientists to the [Spotted Lanternfly Barrier Strip Reviews](#) Facebook page or post your thoughts on the product page that you purchased from. Your input is critical to improving our product and creating the most effective and environmentally responsible option for spotted lanternfly control. [Back to FAQs](#)



4 SIGMA
INNOVATIONS LLC

Product Updates:

News regarding product improvements, best practices, updated pesticide lists and other product-development related information is posted on Facebook on our [@SLFbarrierstrip](#) page. Please like us and share or follow us to stay up-to-date on new developments. [Back to FAQs](#)

Is your product a registered pesticide device?

The EPA provided final determination on Dec 7, 2021 in decision number 567400 that the Spotted Lanternfly Barrier Strip is a pesticide device and therefore not subject to chemical pesticide registration requirements. [Back to FAQs](#)