HORTICULTURE

Newsletter

Join the Mosquito Bucket Challenge as we battle the summer heat and the ever hungry mosquitos! The Earthkind solution is not to use fogging in our environment which does very minimal mosquito control and kills our pollinators in the process. Butterflies, bees, fireflies, birds and many other beneficial pollinators are being killed or made sick by this fogging and spraying action. Lets deal with the problem by stopping the reproductive cycle of mosquitoes in your yard.
Let's STOP the Bite and SAVE the buzz!

Continue on page 2

Happy 4th of July

“If I can hear GODS' music ensemble of thunder along with His light show and cool drops of his breath and his cool 💦 on our faces and our earth, I am like a flower that looks up and smiles. “

Linda Koenig, Nueces County Master Gardener

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TEXAS A&M AGRILIFE EXTENSION

The Mosquito Bucket Challenge

Stop the bite. Save the buzz.

Powered by Homegrown National Park

What It's All About

Mosquito fogging kills nearly everything in your yard...except mosquitoes.

If you're working to create a thriving, biodiverse yard full of life, it doesn't make sense to kill it all with fogging!

The Mosquito Bucket Challenge is a simple, visible way to protect pollinators, birds, frogs, fireflies, and your family—without toxic sprays. By safely targeting mosquito larvae, each bucket helps save the wildlife that fogging puts at risk.

It's safe, it's affordable, it's better for biodiversity. And it actually works.

How the Mosquito Bucket Works

Mosquitoes lay eggs in standing water. This bucket gives them a place to do that, then stops them. A natural soil bacterium called Bti (found in mosquito dunks) kills the larvae before they grow up and bite. This method, sometimes called a "bucket of doom" or "mosquito tea," creates an irresistible breeding site and then shuts it down—without harming pollinators, pets, or people.

- Safe for pollinators
- Safe for pets and children
- Targets mosquito breeding where it starts

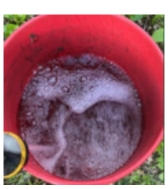
What You'll Need

- A large bucket - 5-gallon works great, but any larger container that holds water will work. See FAQs below for a list of places that offer free buckets.
- Water
- A small handful of dead leaves or grass clippings.
- Mosquito dunks containing *Bacillus thuringiensis israelensis* (Bti) - widely available online and at most hardware stores, garden centers, or home improvement retailers.
- A bucket lid, wire mesh or a sturdy stick.
- Marker or paint for decorating.

How to Make It

Step 1 - Decorate (Optional)

Decorate it with markers or paint pens. Feel free to make it as simple or elaborate as you'd like. You can also decorate a piece of posterboard and tape it on.



Step 2 - Add Water

Fill the bucket about two-thirds full with water.

Step 3 - Make It Funky

Add a small handful of dead leaves or grass clippings (you want to make the water stinky!).

Leave plenty of water surface area so mosquitoes have room to land and lay eggs.

Step 4 - Add Your Dunk

Break up your mosquito dunk and drop approximately one-quarter of the dunk into your bucket.

Step 5 - Add Cover Or Stick

Add a lid with plenty of large holes drilled or wire secured with a rock or zip ties. Alternatively, (if you don't have pets or small kids), place a stick in the bucket so it leans out above the rim. This gives small animals an escape route if they fall in.

Step 6 - Place Your Bucket

Place the bucket in a quiet, shady area, away from your house, play areas, or gathering spots. If you have pets or small kids around, place your bucket up high to keep it safe and out of reach. Add additional buckets if you have a larger yard.

Corners of the yard or property lines often work well. Every yard is different—try a spot that stays damp and quiet.

Step 7 - Show It Off

Post your bucket on social media using the hashtag #MosquitoBucketChallenge! Find additional copy-and-paste text suggestions below.

Additional Tips

- It's helpful to start early in your mosquito season, before mosquito populations explode.
- Speed up the "funkification" of your water by leaving your bucket in the sun for a few days.
- Drill a hole where you want the water line so that any excess water from rain doesn't cause your bucket to overflow.

Join the Challenge

Post a photo or video of your bucket using #MosquitoBucketChallenge. Remember to tag homegrownnationalpark when you share.

Option 1

🪣 I joined the #MosquitoBucketChallenge from #HomegrownNationalPark!

No fogging. No sprays. No harm to bees 🐝 , butterflies 🦋, fireflies, birds 🐦‍⬛, or kids.

Stop the bite. Save the buzz.

Learn how: visit link in bio @HomegrownNationalPark

Option 2

Mosquito fogging kills everything except mosquitoes.

🪣 This bucket does it better, without harming pollinators or people.

Learn how: visit link in bio @HomegrownNationalPark

#MosquitoBucketChallenge #HomegrownNationalPark

AgriLife Research discovery defends citrus and potatoes

Natural plant peptides may provide a new way to combat hard-to-treat plant diseases

May 1, 2025 - by Ashley Vargo

Texas A&M AgriLife Research scientists have developed a new approach to countering citrus greening and potato zebra chip diseases, two economically devastating agricultural diseases in the U.S.

Their method uses spinach antimicrobial peptides, known as defensins, which naturally defend plants against a broad range of pathogens.

In a recent study published in the Plant Biotechnology Journal, researchers showed that some spinach defensins can confer similar protection to citrus and potatoes — and possibly other crops.

The effects show significant progress toward recovering yield and improving quality in diseased plants.

The study was led by Kranthi Mandadi, Ph.D., an AgriLife Research plant molecular biologist and professor in the Texas A&M Department of Plant Pathology and Microbiology, located at the Texas A&M AgriLife Research and Extension Center at Weslaco.

“Dr. Mandadi continues to demonstrate exceptional leadership and innovation in plant pathology, advancing solutions toward greater agricultural resilience and food security,” said Amir Ibrahim, Ph.D., associate director and chief scientific officer of AgriLife Research. “His pioneering work, from hairy root technology to peptide treatments, exemplifies our commitment to scientific discovery that empowers farmers and sustains the agricultural economy in Texas and beyond.”

Recovering citrus trees

Mandadi and his team chose spinach antimicrobial peptides after learning from previous studies that they can fend off various pathogenic fungi and bacteria. Because these peptides occur naturally in spinach, they’re also frequently consumed by humans.

In 2021, the U.S Environmental Protection Agency, EPA, concluded that dietary exposure to spinach defensins is safe for the U.S. population, including infants and children. This makes them an attractive choice for both effectiveness and safety, as they pose no known health risks.

The researchers delivered the peptides to commercial citrus trees using a benign virus developed by University of Florida researchers, who collaborated on the study. The virus naturally infects the trees in the same location where the disease-causing bacteria reside. Using a simple grafting procedure, the researchers were able to apply the virus and allow it to deliver the peptides targeting the bacteria largely on its own.

Over a few years, the research team monitored how citrus trees infected with Candidatus Liberibacter asiaticus, the bacterium responsible for citrus greening, responded to treatment with specific antimicrobial peptides. They saw promising results, including up to 50% increases in fruit yield compared to untreated trees after only a single application.

Recovering potatoes — and more

Additionally, the researchers explored how the spinach peptides might enhance the immune response against Candidatus Liberibacter solanacearum. This bacterium is related to the citrus greening pathogen and causes zebra chip disease in potatoes and other vegetables.

When researchers expressed the antimicrobial peptides in potatoes, the potato plants showed minimal disease symptoms, had less disease-causing bacteria present, had much less of the characteristic zebra chip discoloration in tubers, and had greater tuber numbers compared to untreated plants.

Altogether, the team's results show encouraging effects for the two spinach antimicrobial peptides added independently to citrus and potatoes.

Looking forward, Mandadi plans to explore broader applications and expand the technology's possibilities. He envisions creating "cocktails" of multiple peptides and exploring the effects when combined with other integrated management strategies to control the insects spreading the bacteria as well.

"This is just the beginning," Mandadi said. "There's a lot of promise in these antimicrobial peptides as a new treatment for broader agricultural diseases. We're interested in seeing what other crops these peptides can support. I think it has the potential to become a new broad-spectrum treatment method for crops, alongside traditional agricultural practices."

Southern Gardens Citrus, a subsidiary of U.S. Sugar, has licensed patent rights for the defensins technology developed by AgriLife Research from The Texas A&M University System, as well as the use of the viral vector technology from the University of Florida. They are working with Silvec Biologics to commercialize this technology for use against the bacterium responsible for citrus greening. Silvec filed an application with the EPA in January 2024 to allow for commercial use, marking a critical step toward making this innovation accessible to growers

A collaborative endeavor

The study was funded by the U.S. Department of Agriculture National Institute of Food and Agriculture, along with support from Southern Gardens Citrus and AgriLife Research funds awarded to Mandadi.

Mandadi led the study with collaboration from:

- Carmen Padilla, Ph.D.; Sonia Irigoyen, Ph.D.; Manikandan Ramasamy, Ph.D.; Mona Damaj, Ph.D.; Michelle Dominguez; Denise Rossi; and Renesh Bedre, Ph.D., who worked at the Texas A&M AgriLife center at Weslaco.
- William Dawson, Ph.D., and Choaa El-Mohtar, Ph.D., at the Citrus Research and Education Center, University of Florida.
- Michael Irey at Southern Gardens Citrus, U.S. Sugar, Clewiston, Florida.

The study's publication was dedicated to Erik Mirkov, Ph.D., a plant pathologist at AgriLife Research who worked closely with Mandadi at the Texas A&M AgriLife center before passing away in 2018. Together, the two discovered the spinach defensin peptides as a possible treatment to protect crops.

AgriLife Extension offers new plant identification course

Texas Triple-P Certified course covers basics of plant identification, life cycle, ecological value

June 6, 2025 - by Sarah Fuller

Want to learn more about the plants you cross paths with?

The Texas A&M AgriLife Extension Service has launched an online Texas Triple-P: Plant Phenology Project plant identification course focused on providing foundational skills needed to identify Texas plants and understand their ecological roles and life cycles.

Registration for the self-paced course is required at https://tx.ag/TriplePCourse. The cost is $25. The course offers teachers 1.5 continuing education credits from the Texas Education Agency.

“Texas Triple P’s mission is to cultivate a thriving community of Texans with a passion for plants and the environment,” said Stacy Hines, Ph.D., AgriLife Extension rangeland habitat management specialist and assistant professor in the Texas A&M Department of Rangeland, Wildlife and Fisheries Management, Corpus Christi.

About the course

The course will focus on the life cycle of plants, known as phenology, and introduce the process of plant identification, including taxonomy and anatomy. Species covered will include 13 plants on the Texas 4-H Master Plant List for the Texas Range and Pasture Grass Contest, which are in the family Asteraceae. Examples include the Engelmann daisy, Maximilian sunflower and upright prairie coneflower.

Hines said participants can expect the course to take roughly 1.5 hours to complete, and a score of 100% on all module quizzes is required for a final certificate of completion.
“This course is suited for a wide range of audiences, including teachers, landscape architects or anyone with an interest in improving their plant identification skills,” Hines said.
Following course completion, participants should be able to:

- Understand a plant’s seasonal life cycle.
- Understand the ecological value of plants to wildlife and livestock.
- Identify 13 plants included in the Texas 4-H Master Plant List for the Texas Range and Pasture Grass Contest.
- Distinguish plants of concern from common lookalikes using defining characteristics.

For more information on the course, contact Hines at stacy.hines@ag.tamu.edu

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Watch out for fuzzy, stinging caterpillars

Texas A&M AgriLife experts warn contact can cause rash, painful reaction

May 29, 2025 - by Susan Himes

As temperatures warm up, Texas A&M AgriLife Extension Service experts urge Texans to stay alert for stinging caterpillars. These fuzzy, or sometimes spiky, insects may seem harmless but can cause itchy rashes, intense pain and severe reactions requiring medical attention.

Perhaps the most common stinging caterpillar in Texas is the southern flannel moth caterpillar, also known as the asp or puss caterpillar.

Asp puss caterpillar, also known as flannel moth caterpillars showcasing a thick, fur-like covering in shades of tan and brown. (Wizzie Brown and Ray Pulak/Texas A&M AgriLife)

Asps are "teardrop-shaped caterpillars that look touchable, but they are not," said Wizzie Brown, AgriLife Extension specialist in integrated pest management for Travis County. "Asps have spines attached to venom glands that can lead to a nasty sting, rash and other issues."

How to avoid being stung

While many fuzzy caterpillars are harmless, never handle them unless you're sure they are not a stinging species, Brown said. The asp caterpillar, for example, looks deceptively soft. This can make it especially tempting for children to pick up or "pet" them.

Additional tips to avoid being stung:

- Wear gloves when working in the yard.
- Avoid sitting under trees where caterpillars may drop onto you.

Wear long sleeves and pants when outdoors, especially in wooded areas.

Symptoms and treatment

If you are stung, you may feel immediate pain and reddish-colored spots may appear where spines entered the skin. Some people may not feel pain until several minutes after being stung, while others immediately experience intense throbbing or radiating pain. Other people may not feel much discomfort and a red rash may be the only telltale sign.

"Some people may have a more severe reaction than others, and where on your body you are stung and the thickness of that skin can affect your reaction, too," Brown said.

If the caterpillar is still on you, immediately shake it off if possible, and use tape to remove any remaining spines in your skin, Brown said.

An ice pack should be applied to the site of the sting, and oral antihistamines can be administered to help relieve the itching and burning sensations.

Other symptoms after a sting can include nausea, vomiting, headaches, respiratory stress or shock. Since reactions to the toxins from stinging caterpillars can vary, seek medical advice or treatment or go to an emergency room if you become concerned. Any contact with eyes or an allergic reaction to a sting warrants immediate medical attention.

Texas caterpillars commonly confused with stinging species

Brown said she has been getting questions about saltmarsh caterpillars, often confused for stinging caterpillars because they're fuzzy.

Saltmarsh caterpillars are common across the U.S. and include several species that transform into tiger moths. They are prevalent throughout Texas.

Unlike stinging caterpillars, woolly bear caterpillars, as the saltmarsh caterpillar is also known, are harmless to humans.

A vibrant image of a Salt Marsh Caterpillar (Estigmene acrea) long, bristly hairs that range in color from yellow to reddish-brown or black. (Wizzie Brown/Texas A&M AgriLife)

"Many people see the hairs on this caterpillar and automatically think, 'Don't touch that — I'm going to be stung.' Fortunately, these are not stinging caterpillars, so you can handle them and they won't hurt you," Brown explained.

Still, she cautions, "If you aren't 100% sure what an insect is, it's best not to touch it with your bare hands. If you want to pick a caterpillar up, put on some gloves. That way, you're safe if it is a stinging caterpillar."

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