GRAPE & WINE

'SPLAT' offers new method to apply pheromones

By Dick Lehnert
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Splat is more than just the sound a bug makes when it hits your windshield.

These days, SPLAT comes in a bucket, and it can be applied, sensibly enough, with a SPLAT-o-Gator. And it does go splat when it hits its target, which could be grape vines and leaves and trellis posts in a vineyard.

SPLAT is the descriptive acronym for Specialized Pheromone and Lure Application Technology, a concept and product from ISCA Technologies, Riverside, Calif. The company holds the license for producing SPLAT, which is a combination of a food-grade wax designed to be a carrier for, among other things, insect pheromone sex attractants. They are used in orchards and vineyards to disrupt the mating of grape berry moths, codling moths, oriental fruit moths and other insects.

The idea was to make something that would exude the pheromone uniformly over a long time and be easier and less labor consuming to apply than the normal method, which uses pheromone embedded in twist ties or emitted in periodic puffs from a canister.

Given the product, three entomologists at Michigan State University (MSU) decided to speed up the process even more, building the SPLAT-o-Gator. For about $600, they mounted a canister of SPLAT, a bottle of compressed air, some hoses and solenoids and nozzles on a metal frame onto a John Deere Gator.

Entomologists Rufus Isaacs, Keith Mason and Luis Teixeira showed off their creation during Viticulture Day at the Southwest Michigan Research and Extension Center (SWMREC) in Benton Harbor, Mich., this summer.

"For a set tank pressure and ground speed, the SPLAT-o-Gator delivers a precise number of droplets of a set size per vine," according to a report they wrote. "With the mechanical applicator, we can deploy 2 pounds of SPLAT-GBM per acre in 1,250 droplets of 0.8 milliliters each."

The machine moves right along, 10 miles per hour, spitting SPLAT droplets and covering an acre in five to seven minutes, using about 5 gallons of fuel to cover the entire 120 acres of vineyards in their research trials.

The wax goes on as a thick liquid, sticks to whatever it hits, then skins over, becoming a long-lasting emitter of the pheromone. Mating disruption was shown to be effective on grape berry moth in earlier research, Isaacs said, but the technology has not been widely adopted, partly because of cost, partly because it is time-consuming to apply twist ties.

Grape berry moth is the major insect pest of grapes in Michigan and across the eastern United States, first attacking vines at bloom time. It will infest the tiny berries, causing them to fall off. Later in the season it attacks larger fruit, the larvae feeding on the grape flesh and leaving behind "rattles" – seeds in an empty husk. Isaacs said protection, whether insecticides or pheromones or both, is needed for up to 20 weeks. The wax in SPLAT exudes the pheromone for about 12 weeks.

MSU entomologists showed off the SPLAT-o-Gator, which dispenses a waxy material containing pheromone that is slowly released. *Photo by Dick Lehnert*

According to the ISCA Technologies Web site, SPLAT has numerous advantages over current controlled-release technologies.

It can be adjusted to vary release rates and duration from weeks to months, depending on the size of the SPLAT dollop. In many cases, season-long control with one application is possible.

Its "amorphous and flowable quality" allows for many types of application methods: spatula, caulking gun, metered backpack sprayer, tractor, aircraft, etc.

SPLAT has proven its effectiveness in mating disruption, lure and attract-and-kill programs for many insect pests such as codling moth, oriental fruit moth, pink bollworm, gypsy moth and Brazilian apple leafroller, according to ISCA Technologies.

The product is expected to be available to grape growers in 2009, Isaacs said, but the cost of the product has not yet been determined.

The MSU entomologists are working with nine grape growers in Southwest Michigan, so they have field results from trials on more than 100 acres. In their trials this year, they found SPLAT to be effective at reducing first-generation berry moth infestation when applied at a pound per acre.

They are trying various programs, including two-times application of SPLAT to cover the entire season or use of insecticides early in the season against first-generation berry moths and then using the pheromone treatments later for the second and third generations. They are also looking at effectiveness of applications in areas surrounding a vineyard.

The MSU team's research on mating disruption of grape berry moth is supported by National Grape Cooperative, Project GREEEN, the IR-4 Biopesticide Program and USDA's Pest Management Alternatives Program. FGN