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PD/GWSS BOARD RESEARCH bulletin

SPRING 2006

Control Program Gears Up for Another Season

As a wet winter turns to spring and California temperatures start to climb, Glassy-Winged Sharpshooters (GWSS) once again become active, and state and local trapping efforts once again shift into high gear.

"A lot of the credit really goes to the county ag commissioners," said PD Control Program Supervisor Roger Spencer. "They are the ones who are on the front lines seeing to it that the traps are out and being checked."

The trapping season begins in March and April and runs through October. Traps are usually set five per square mile and checked every two weeks. They are moved to a new site every six weeks.

"Over the years we have accumulated data that is helping us refine our trapping program," said Spencer. "This data gives us a better picture of what host plants are preferred by the GWSS. Depending on the season and growth cycles, this helps in determining the best trap placement."

The GWSS has two generations per year in California. Although adults are present and must feed throughout the year, egg-laying activities are either absent or reduced to very low levels during the winter months of December, January and February. During this same period, the number of overwintering adults also decreases. Depending on temperature, egg laying can begin as early as late February and continues through May. The first generation completes development from late May to late August. Adults from this generation lay egg masses from mid-June through late September, which give rise to overwintering adults.

Generally infested counties include Los Angeles, Orange, Riverside, San Bernardino, San Diego and Ventura. Counties with limited infestations of GWSS include Fresno, Kern, Imperial, Sacramento, Santa Barbara, Santa Clara, Solano and Tulare.

GWSS-free counties include Alameda, Amador, Butte, Calaveras, Colusa, Contra Costa, El Dorado, Glenn, Humboldt, Kings, Lake, Madera, Marin, Mariposa, Mendocino, Merced, Monterey, Napa, Nevada, Placer, San Benito, San Francisco, San Joaquin, San Luis Obispo, San Mateo, Santa Cruz, Shasta, Sonoma, Stanislaus, Sutter, Tehama, Trinity, Tuolumne, Yolo and Yuba.

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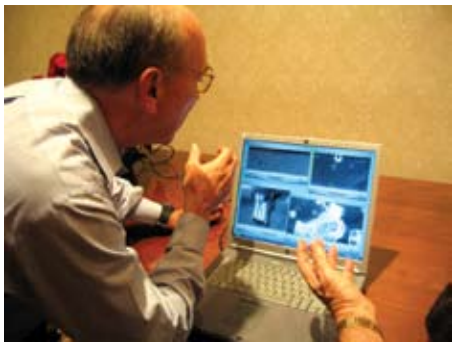
PD/GWSS Researchers Meet in San Diego

Researchers gathered in San Diego again this last December to compare notes and discuss each other's research projects during the 2005 Pierce's Disease Research Symposium.

Over 200 researchers, along with winegrape growers and those from the citrus and nursery industries, gathered for three days to learn about some of the latest research and talk about what's being done to find a solution to the PD/GWSS threat.

Toward the end of the symposium, it was the growers' turn to get up in front of the researchers gathered from around the world and ask them some questions that were on their minds.

Craig Weaver, formerly the vineyard manager at Callaway Vineyard Winery in Temecula, posed several questions that he felt researchers should be looking into, one being, "I'll see a vineyard wiped out and another close by with only a few vines lost – why?"



A group of researchers (left) discusses the findings of a recent project. Research poster boards (center) for each research project filled a room, allowing those gathered to see what other researchers from around the world were doing. At right, Dr. Sandy Purcell watches a video showing how PD bacteria move within a vine.

"I think what impresses me most is how far we have come compared to when we started several years ago," said Dana Merrill, a winegrape grower from San Luis Obispo.

Merrill points to two areas of success, Temecula and the General Beale Pilot projects. "It is clear that dividends are already being reaped from our research investment. Both regions are producing crops where GWSS and PD are present, which did not seem possible when the regions first became infested," said Merrill.

Perhaps Steve McIntyre of Monterey Pacific Co. Inc. in Soledad summed up the hopes of the grower community best when he said, "We understand a whole lot more than we did five years ago. While we are not as far along as we need to be, I'm more convinced than ever that we will eventually get there."

Those interested in finding out more about the research that was presented during the symposium can download the 399-page Symposium Proceedings at http://www.cdfa.ca.gov/gwss/ResearchSymposium/gw2005Proceedings.htm.

On the ResearchFront

Here are some of the research projects that are being funded either entirely or in part by winegrape assessment funds.

Significance of riparian plants as reservoirs of Xylella fastidiosa for infection of grapevines by the blue-green sharpshooter

Project Leader: Kendra Baumgartner, USDA, ARS, Davis, Calif.

This study is measuring the abundance of the Blue-Green Sharpshooter on five species of naturally established plants (California blackberry, California grapevine, elderberry, Himalayan blackberry and periwinkle) in riparian areas adjacent to vineyards on the North Coast of California. The goal is to identify riparian hosts of greatest importance in the transmission of PD to grapevines.

Comparative proteomic analysis of stem tissue and xylen sap from Pierce's disease resistant and susceptible grapevines

Project Leaders: Hong Lin and Felix Fritschi, Crop Diseases, Pests and Genetics Research Unit, USDA, ARS, Parlier, Calif.

This research is investigating protein expression in xylem sap and stem tissue of grapevines that are either highly tolerant or susceptible to PD in an effort to discover which genes in those vines are identifiers to those qualities. It is hoped that this study will lead to a method of identifying PD-resistant grape vines much more quickly, as well as provide an integrative picture of the nature of PD resistance in grapevines.

Symbiotic control of Pierce's disease: Testing reagents against Xylella fastidiosa

Project Leaders: Arinder K. Arora and Timothy S. Yolo, Department of Entomology, University of California, Riverside, Calif.

This study explores paratransgenesis as a possible new tool for the management of PD. Paratransgenesis in insects is the genetic alteration of microbes living in association with insects for various purposes. This research may lead to a method that prevents sharpshooters from either acquiring PD or transmitting it to grapevines when they feed.

For more information on these and other studies, you can download the Symposium Proceedings at http://www.cdfa.ca.gov/phpps/pdcp/ResearchSymposium/gw2005symp.htm

Dr. Sandy Purcell Retires

After 35 years of peering into microscopes and traipsing around vineyards, Dr. Alex (Sandy) Purcell, long-time Pierce's disease researcher, will retire this spring from U.C. Berkeley.

Dr. Sandy Purcell, right, discusses a research project with two other researchers during the PD Symposium held in San Diego last December.

Dr. Purcell's first studies into Pierce's disease were as a graduate student at U.C. Davis in 1972. "In those days, we thought PD was a virus," he said. "In my research I found that vines could recover from PD. When my advisor told me that vines couldn't recover, I thought I had done something wrong. It turns out I was right, and I was able to prove it."

After graduating from U.C. Davis, Dr. Purcell became an assistant professor in U. C. Berkeley's Department of Entomological Sciences. His research efforts have centered on insects as vectors of bacteria and phytoplasmas that cause plant diseases, as well as symbiosis of bacteria with plant sap-feeding insects.

"I think that perhaps my greatest contributions to PD research were discovering that vines can recover from PD, the therapeutic effects of freezing on vines and that PD is transmitted from the foregut of sharpshooters," said Dr. Purcell

Dr. Purcell isn't finished with PD research yet. "I plan to do some independent research," says Dr. Purcell "I'd like to look into some symbiotic bacteria relationships, and I have some long-shot ideas I'd like to explore."

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