Research

Research to develop solutions for Pierce's disease and to minimize the threat of transmitting the disease to agriculture and plant life is critical.

Research priorities for the disease and its vectors have short-, medium-, and long-term objectives. From the short-term perspective, tools are needed to reduce the natural and artificial spread of the glassy-winged sharpshooter. This includes understanding the biology of the insect in California, finding new natural enemies of the pest and determining which insecticides are most effective.

Medium-term objectives blend research on the sharpshooter with an effort to determine how to manage Pierce's disease. Areas of concern include: (1) discovering how the sharpshooter selects a host plant; (2) analyzing the epidemiology of the disease; (3) searching for disease pathogens that will attack the sharpshooter; and (4) determining if cultural practices can reduce the disease's infection in grapevines.

Long-term research focuses almost exclusively on the disease – breeding grapevines resistant to Pierce's disease, finding a non-pathenogenic strain of the disease to use as a biological control agent and determining whether the sharpshooter could be modified so that it cannot spread the disease.

Research Task Forces and Funding

In August 1999, CDFA Secretary Lyons appointed an ad hoc committee to develop research priorities and identify sources for funding Pierce's disease research. Governor Gray Davis signed AB 1232 (Cardoza) in October 1999, allocating $750,000 in state funds, with a requirement for matching industry funding of $250,000 a year, for three years for competitive research grants. Using the priorities established by the Secretary's ad hoc committee, these funds have been dispersed to researchers.

In addition to research funding, AB 1232 created the Pierce's Disease Advisory Task Force. Recognizing the enormity of the challenge and the limited resources available for research, the task force formed a research subcommittee comprised of representatives from affected commodities, including viticulture and viticulture research, the almond and citrus industries and the USDA. Coordinating the efforts of these groups has helped to eliminate redundant research, increased available research funds and fostered collaborative efforts among researchers. This combined research effort has funded 32 projects with approximately $3.7 million from the State of California, the United States Department of Agriculture and various industry groups (refer to appendices for a complete list of funded research projects).

An additional $5.2 million in research funding is available from the USDA. The research subcommittee reviewed 44 proposals and recommends that all or a portion of 19 projects receive USDA funding. If approved by the Secretary of the CDFA and the USDA, the combined research effort for Pierce's disease and its vectors will total an investment of $7.7 million for 51 projects.

Scientific Communication

Sharing the results of ongoing projects and any new research projects is vital to ensuring rapid progress. To promote scientific communication, a series of focused research meetings have been conducted statewide. This year alone, a meeting was held in Riverside in October to discuss research done in Temecula; a second meeting in Bakersfield in November emphasized research by University of California scientists; and a December symposium held in Davis featured more than 60 scientists from around the world focused on finding a solution for the Pierce's disease problem.

Early in 2001, the Pierce's Disease Advisory Task Force will sponsor a symposium for research grant recipients to report their results and programs for the coming year. The symposium will include both a technical session and public session to provide progress reports. The task force will continue to review research priorities, coordinate research funding and provide progress reports on all program-related research projects.

Accomplishments

There has been significant progress on a number of short-term research objectives, as follows:

- A number of materials have been tested and appear effective against the sharpshooter. Products that exterminate insect nymphs as they emerge from the eggs will be important to use on nursery stock.

- The pathogen that causes Pierce's disease uses the gum in the xylem tubes as a growth substrate. This indicates that the relationship between the plant and the pathogen may be more complicated than originally thought. It also opens new avenues for plant resistance to the disease.

- Initial studies of the seasonal movement of the sharpshooters in citrus in Southern

California have been completed. If we know where and when the sharpshooter moves along its host plants, it increases our ability to target control measures more accurately.

- The suspected movement of the sharpshooter from citrus orchards in vineyards has been documented to help growers develop an effective pest management program.

- Scientists in Brazil have sequenced the DNA from the *Xylella* strains. Accurate DNA tests will assist in determining if a plant or a sharpshooter is infected with *Xylella* and identify the pathogen strain.

- A preliminary model of how the sharpshooter transmits Pierce's disease through a vineyard has been developed.

- A pilot test for an areawide sharpshooter management program in Riverside County is being evaluated and may be able to lower insect populations without extensive spraying to a single crop if successful.