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2012 Annual Report to the Legislature

Pierce's Disease Control Program

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California Department of Food and Agriculture

2012 Annual Report to the Legislature

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Karen Ross, *CDFA Secretary*

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Statement of the Secretary

In more than a decade since its creation, the Pierce's Disease Control Program (PDCP) has evolved into an exemplary grower-government partnership. The California Department of Food and Agriculture (CDFA) has drawn upon this program's expertise and experience in building other successful programs, including our efforts against the European grapevine moth (EGVM) and the Asian citrus psyllid (ACP), among others. This document contains many useful statistics and other bits of information about the work we have done to date, but those elements are held together by a unifying thread of cooperation between and among growers, agencies, stakeholders, researchers, and every other person who has contributed to the effort.

I am proud of the success of this program, but we are not done yet. We have accomplished a great deal with our research toward a solution to Pierce' disease (PD), but much work remains to make sure those approaches achieve results in our vineyards. I look forward to fulfilling that commitment.

Karen Ross, Secretary
California Department of Food and Agriculture

Executive Summary

The year 2012 proved challenging yet promising for the PDCP. This was the first full year without General Fund assistance. As the PDCP lost state revenue, the winegrape industry augmented financial support to ensure that vital program elements continue. Some improvements and refinements have been made due to experience and others as a consequence of financial constraints. While revenues receded, accomplishments and successes continued.

The five major components of the PDCP -- contain the spread, statewide survey and detection, rapid response, outreach, and research -- remain as integral to the program as in past years. For example, in 2012 the rapid response component of the program achieved eradication of a glassy-winged sharpshooter (GWSS) infestation for the 16th time in the program's history.

Nursery stock moving from Southern California to Northern California has in past years provided GWSS an opportunistic pathway to spread to new regions of the state. With the onset of a Nursery Stock Approved Treatment Program (ATP), that risk has been minimized. Nursery shipments moving under the ATP protocol were found to be 100% free of viable GWSS at destination.

Most promising for the PDCP are the advancements in research, some of which are now being tested under field conditions. The prospect of commercial applications that could halt or significantly reduce the death of grapevines due to PD looms large in the near future.

In the following pages of this report, you'll see that the statewide, cooperative PDCP continues to fulfill its mission of minimizing the impact of PD and its vectors in California. With the support of our many stakeholders we are confident this program can continue to provide a lasting benefit to those whose livelihoods depend on healthy grapevines.

Background

The Threat

PD is a fatal bacterial disease of grapevines that is spread by certain types of insects. It has been present in California for more than 100 years and in the past has caused sizable losses to viticulture in localized "hotspot" areas of the state. Until recently, it did not pose a severe threat to the majority of areas under grape production. This situation changed dramatically with the arrival of the GWSS, a new and aggressive insect vector of PD. Because of this insect, viticulture in traditionally safe growing regions is now at risk from the disease. Considering only grapes, the disease now threatens a crop production value of $3.86 billion and associated economic activity within California in excess of $61.5 billion. Other crop and ornamental plant resources such as almonds ($3.86 billion) and susceptible species of citrus ($776 million), stone fruits ($700 million), and shade trees are also at risk, either from the PD strain of the bacterium or from related strains found elsewhere in the world. To counter this threat, the PDCP was established within the CDFA to minimize the statewide impact of PD and the GWSS.

Pierce's Disease

PD in grapevines was first noted in California near Anaheim around 1884. The disease is caused by a strain of the bacterium *Xylella fastidiosa*. It kills grapevines by clogging their water-conducting vessels (xylem) and triggering cell death in the plant. Several strains of this bacterium exist, attacking and causing damage to different host plants including grapes, citrus, stone fruits, almonds, oleander, and certain shade trees such as oaks, elms, maples, and sycamores. The University of California (UC) reported that the disease destroyed over 1,000 acres of grapevines in northern California between 1994 and 2000, causing $30 million in damages.[1] There is currently no known cure for PD.

Vines showing symptoms of Pierce's disease

[1] Report of the Pierce's Disease Research and Emergency Response Task Force. April 2000.

The Glassy-winged Sharpshooter

The GWSS was first reported in California in 1994 but probably arrived in the state in the late 1980s. It is native to the southeastern United States and northeastern Mexico. It feeds on the xylem fluid of a large number of plants. This sharpshooter builds up large populations on a diverse array of host plants and is a strong flyer, traveling greater distances than native sharpshooters.

California's first indication of the severe threat posed by this new disease and vector combination occurred in Temecula, Riverside County, in August of 1999, when over 300 acres of grapevines infested with GWSS were destroyed by PD. Losses continued to mount in Temecula and other infested areas in following years, eventually exceeding 1,100 acres statewide by 2002.

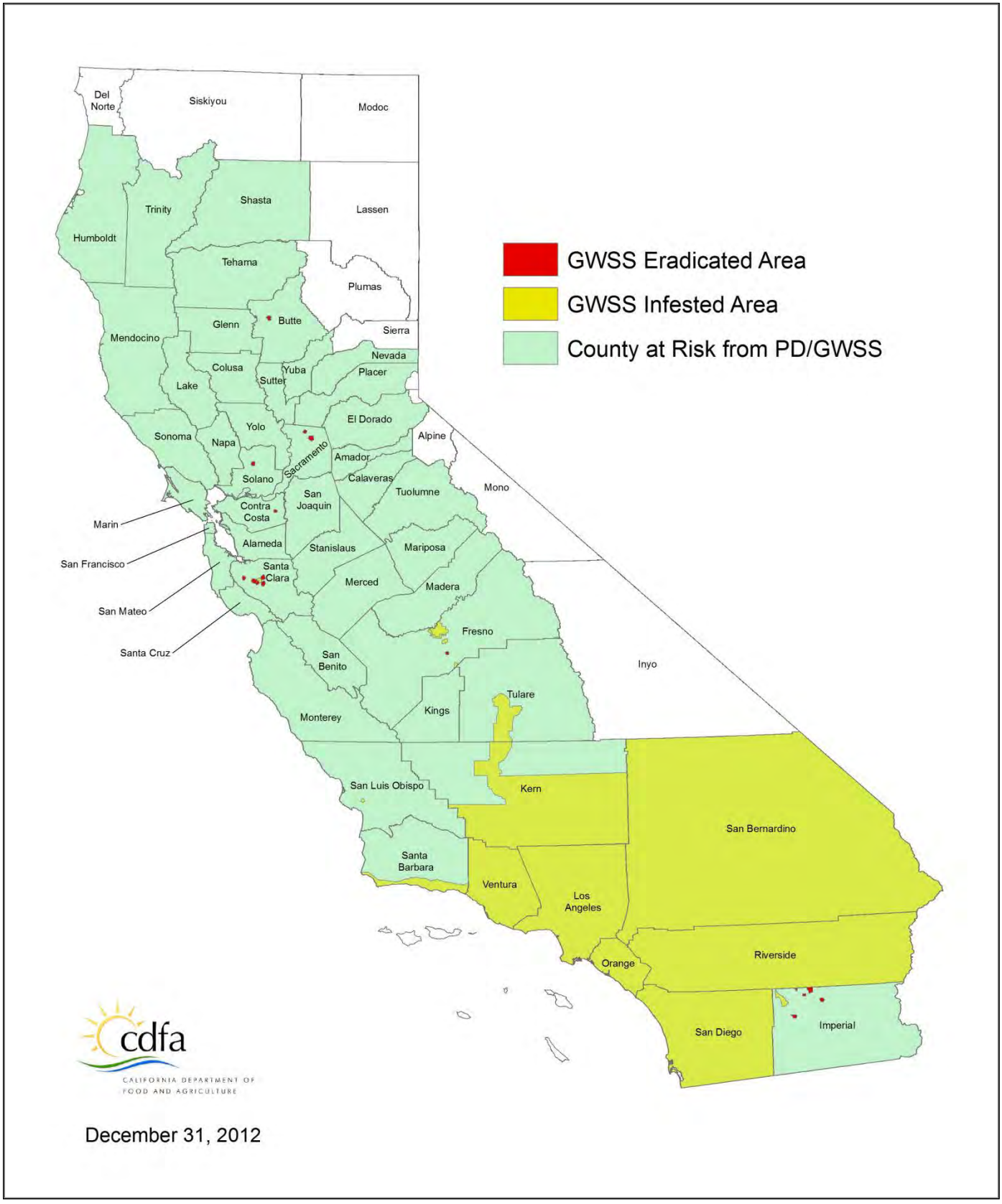
The GWSS clearly has the potential to increase both the incidence and severity of PD in California. As observed in the Temecula infestation, the sharpshooter:

- Builds to high populations that substantially increase the number of insects vectoring the destructive *Xylella fastidiosa* bacteria to crops;
- Travels longer distances in a shorter time than other sharpshooters;
- Makes use of more breeding habitats and plant hosts than native vectors; and
- Transmits the bacteria from vine to vine, resulting in an exponential increase in disease incidence in vineyards.

The combination of PD and GWSS constitutes an unprecedented threat to California's multi-billion dollar grape and wine industry, as well as to almonds, oleander, and other crop and ornamental plants.

An egg mass, nymph, and adult glassy-winged sharpshooter

Pierce's Disease and Glassy-winged Sharpshooter in California

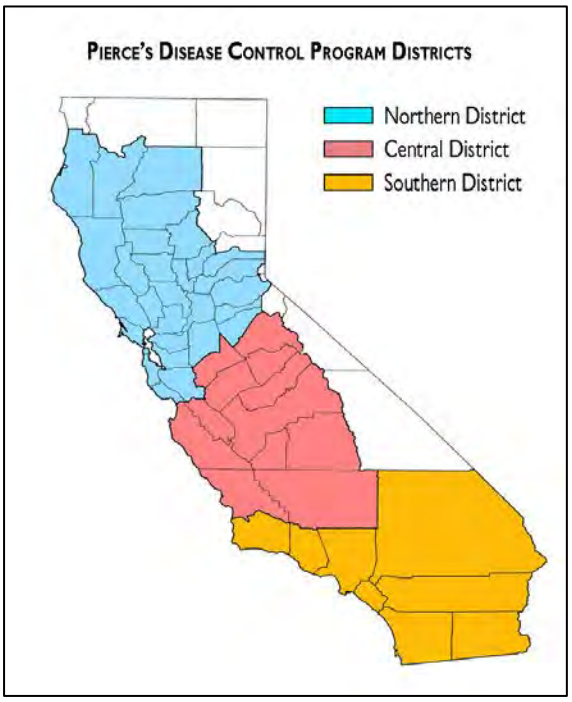


Program Description

The PDCP works to minimize the statewide impact of PD and the GWSS. The strategy is to slow or stop the spread of the GWSS while short- and long-term solutions to PD are developed. This strategy relies upon the following five elements:

1. **Contain the Spread**
   Prevent the spread of the GWSS to new areas of the state by regulating shipments of host plants and other host material.
2. **Statewide Survey and Detection**
   Find and monitor GWSS infestations and populations through trapping and visual survey.
3. **Rapid Response**
   Respond quickly to detections of GWSS in new areas by intensively surveying the area and applying treatments if necessary.
4. **Outreach**
   Raise awareness about PD and its vectors while responding to the concerns of growers and the public.
5. **Research**
   Develop solutions to PD and its vectors.

Organization



The PDCP is a partnership that includes the CDFA, County Agricultural Commissioners, United States Department of Agriculture (USDA), UC, other state and local agencies, industry, and agricultural organizations throughout the state.

A Statewide Coordinator directs the program in accordance with the policies and priorities established by the Secretary of the CDFA. Program staff are located throughout the state and are responsible for coordinating and implementing the elements of the program, as well as communicating with program stakeholders. This includes working closely with the County Agricultural Commissioners to ensure that program activities are conducted in accordance with all statutory and regulatory requirements. Scientists at the CDFA's Plant Pest Diagnostics Center provide pest identification services. Biological control agents are produced in the CDFA laboratory facility in Arvin. Researchers throughout the state and elsewhere are under contract with the CDFA, UC, and the USDA. Local task forces help develop action plans, mobilize local resources, and share information with stakeholders and affected parties.

County Workplans

The Agricultural Commissioner of each county is responsible for conducting local PDCP activities. These activities are guided by workplans developed by the County Agricultural Commissioners and submitted to the CDFA for approval. As stated in the law (California Food and Agricultural Code Section 6046), county workplans must include the following elements:

1. Outreach presentations and training in local communities that respond to local concerns;
2. Ongoing training of employees in the biology, survey, and treatment of PD and its vectors;
3. Identification of a local coordinator;
4. Proposed response to the discovery of the disease and its vectors (including delimitation and treatment); and
5. A system to track and report new infestations.

Program activities are conducted year-round. County Agricultural Commissioners submit activity reports electronically to the CDFA each month. Audits are conducted on one or more counties each year to verify the accuracy and appropriateness of charges and expenditures.

Advisory Groups

Several groups advise the PDCP. These include the following:

Pierce's Disease and Glassy-winged Sharpshooter Board

The Pierce's Disease/Glassy-winged Sharpshooter (PD/GWSS) Board is composed of representatives from the winegrape industry, plus one member from the public. It provides recommendations to the Secretary on the use of funds collected under the PD/GWSS winegrape assessment, a statewide value-based assessment which has raised approximately $41 million over the last 11 years. The Board is advised by subcommittees established to focus on specific areas and issues.

Pierce's Disease Advisory Task Force

The PD Advisory Task Force is composed of County Agricultural Commissioners, scientists, agricultural representatives, and other experts. The Task Force reviews program progress and develops recommendations for the Secretary. Similar to the PD/GWSS Board, the Task Force is advised by subcommittees established to focus on specific areas and issues.

Pierce's Disease and Glassy-winged Sharpshooter Science Advisory Panel

The PD/GWSS Science Advisory Panel is composed of university scientists who are experts on PD and its vectors. The Panel provides input and expertise on scientific issues associated with the program.

Pierce's Disease Research Scientific Advisory Panel

The PD Research Scientific Advisory Panel is composed of university scientists with expertise in research areas directly applicable to PD and its vectors. It provides input and expertise on the research effort.

Pierce's Disease Research Symposium Planning Group

The PD Research Symposium Planning Group is composed of representatives from the USDA, UC, CDFA, and industry. This group assists the PDCP with planning research symposia by providing input on format, content, and schedule.

California Agricultural Commissioners and Sealers Association/Glassy-winged Sharpshooter Advisory Group

The California Agricultural Commissioners and Sealers Association (CACASA)/GWSS Advisory Group is composed of agricultural commissioner representatives from each of the five CACASA area groups in the state. This group meets regularly to discuss issues of statewide and regional concern and to promote statewide program consistency and good communication among state and county cooperators.

Contain the Spread

The Contain the Spread element of the program is designed to prevent the spread of the GWSS to uninfested areas of the state on articles and commodities shipped from infested areas. Emergency regulations governing the movement of nursery stock and bulk grapes were first adopted in July 2000. Regulations on bulk citrus were added later, following finds of live sharpshooters in bulk citrus shipments. Permanent program regulations were adopted in July 2003.

Nursery

Nursery stock is a high-risk commodity for spreading the GWSS. Approximately 60% of California's 12,000 licensed nurseries are located in sharpshooter-infested counties. Many of these nurseries ship to the uninfested areas of the state. Activities to mitigate the risk of moving the GWSS on nursery stock include:

1. Inspection of nursery stock in infested areas prior to shipping to non-infested areas;
2. Treatment of nursery stock when necessary;
3. Certification of shipments;
4. Inspection of nursery stock at receiving nurseries prior to sale; and
5. Trapping in and near nurseries shipping to infested areas.

Inspection Results

In 2012, there were 44,600 shipments of nursery stock from infested areas to uninfested areas. Viable life stages of GWSS were discovered on only two of these shipments.

Over 90% of all rejections between 2001 and 2012 have been for GWSS egg masses. The table on the right presents the results of the ongoing nursery inspection and shipment certification program.

YEAR	NUMBER OF SHIPMENTS	GWSS FOUND	% FREE OF GWSS
2001	57,600	149	99.74%
2002	65,800	77	99.88%
2003	65,000	40	99.94%
2004	76,700	64	99.92%
2005	72,600	84	99.88%
2006	69,000	47	99.93%
2007	73,100	46	99.94%
2008	62,600	37	99.94%
2009	53,700	23	99.96%
2010	50,600	6	99.99%
2011	44,500	4	99.99%
2012	44,600	2	99.99%

Regulated nursery shipment results

Enforcement Actions

Enforcement actions are taken against nurseries and shipments that are in violation of the regulations. Actions can be taken at origin or destination.

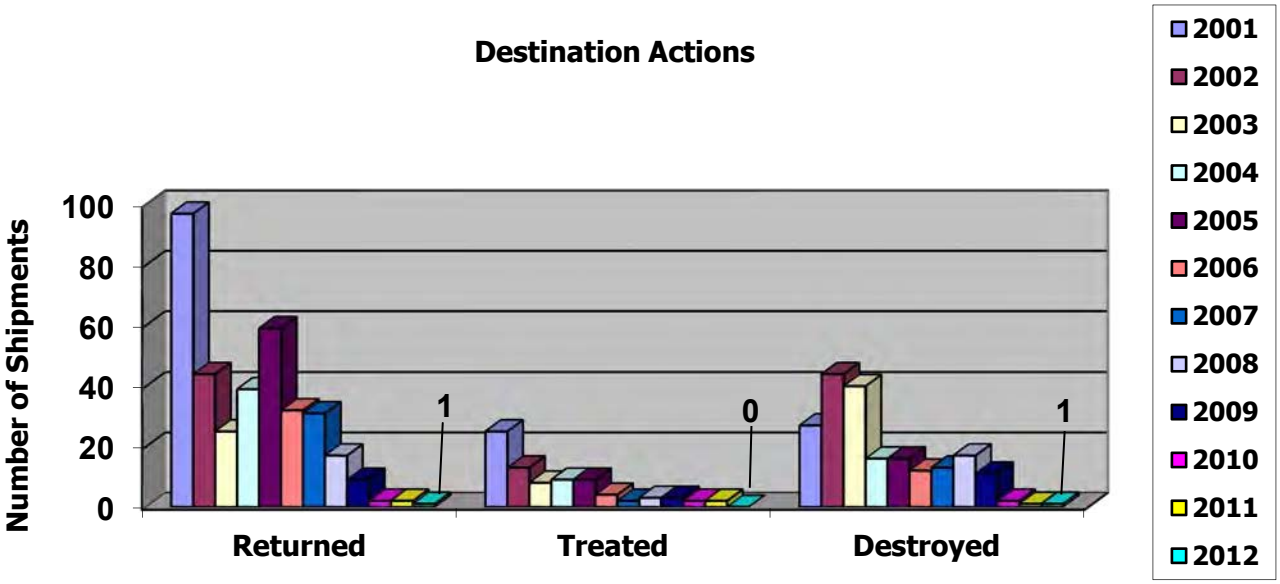
Actions that can be taken at the origin of nursery shipments consist of the following:

- ***Restriction:*** The nursery is restricted from shipping certain species of host material out of the infested area for a period of time.
- ***Suspension:*** The nursery is suspended from shipping all host material out of the infested area until the pest risk is mitigated.
- ***Revocation:*** The nursery's compliance agreement is revoked and it cannot ship any host material out of the infested area for an established period of time.

Actions that can be taken at the final destination of nursery shipments consist of the following:

- ***Treatment:*** The nursery shipment must be treated with an effective material.
- ***Return:*** The shipment must be returned to origin.
- ***Destruction:*** The shipment must be destroyed.

Shippers and receivers who violate nursery stock regulations are subject to fines. In 2012, administrative penalties were levied against three companies, totaling $2,000.



Nursery Stock Approved Treatment Program

The Nursery Stock Approved Treatment Program (ATP) began in June 2008. This program was implemented following the successful three-year Nursery Treatment Pilot Program. With the ATP, qualified nurseries are allowed to ship nursery stock, treated with selected materials, to non-infested areas without an origin inspection. These chemicals are 100% efficacious at killing emerging GWSS nymphs.

In 2012 there were seven participating nurseries that shipped approximately 2.8 million plants in 10,222 shipments. There were a total of 28 yards associated with these seven nurseries. Thirty-nine counties received product from ATP nurseries, with no viable GWSS life stages detected in any shipments.

Trapping is conducted in ATP nurseries to ensure pest free standards are met. Yard traps are maintained at two traps per acre in all ATP nurseries. If a trap exceeds the threshold of 10 GWSS, then all host plant material within a 200 foot radius[1] must be treated and placed on hold for a minimum of two weeks. All trapping is conducted by the respective County Agricultural Commissioner's staff. Results from the 2012 trapping efforts are as follows:

Total Number of Yards	Total Acreage	Total Number of Traps	Number of Traps >10 GWSS
28*	1,367	2,886	48

*In December 2012, two yards totaling 390 acres and 705 traps were added to the ATP.

Nurseries that are near citrus may opt to wait two or three trap cycles before applying a chemical application to the hold area if citrus harvesting or other activities will lead to re-infestation. No plant material is allowed to move from areas under hold.

Nursery stock being shipped under this program must be treated with carbaryl or fenpropathrin. All treatments are witnessed by licensed county inspectors. Additional monitoring of treatments includes random water sensitive paper quality control checks. Sheets of water sensitive paper are placed strategically within the nursery stock shipment at various heights and locations on the plants. PDCP staff placed water sensitive paper at each participating nursery a minimum of once a month. Out of 175 water sensitive papers used only three indicated the need for partial retreatment of the shipment.

County inspectors may choose to monitor egg masses found during destination inspections with insect rearing sleeves. In 2012, a total of ten egg masses from four ATP yards were sleeved by destination counties with no viable GWSS emergence.

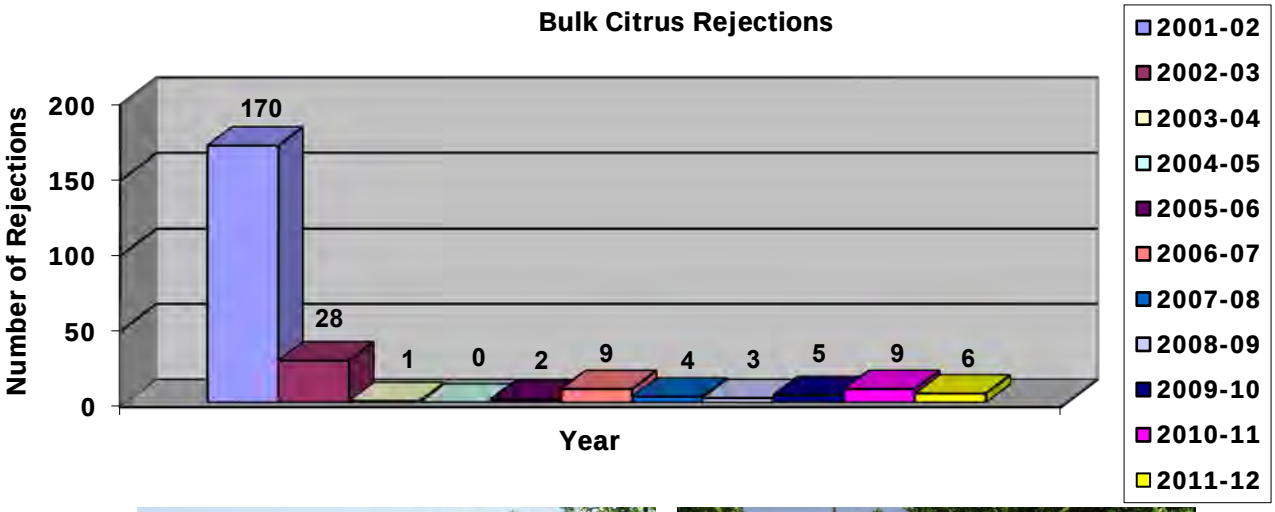
In addition, some receiving counties conducted pesticide residue sampling of ATP plant material upon its arrival at destination nurseries. This sampling was performed on a random basis and was funded by the respective counties.

[1] The hold/treatment radius is scheduled to be reduced to 100 feet effective January 2013.

Bulk Citrus

Citrus trees are primary hosts for the GWSS throughout the year. When the weather is warm, the insects are active and will flee the disturbances associated with harvest. However, once the weather turns cold, the sharpshooters are relatively inactive, and can end up in picking bags with harvested fruit, ultimately turning up at processing facilities in other parts of the state.

During the most recent citrus-shipping season (October 2011 through September 2012), live GWSS were found in only six out of approximately 35,000 certified shipments of bulk citrus. This shipping season achieved a success rate of 99.99%. This success is attributed to the cooperative efforts of bulk citrus program participants.



Citrus harvest and inspections

Statewide Survey and Detection

The Statewide Survey and Detection element of the program is designed to locate new GWSS infestations quickly and ensure that non-infested areas remain free of infestation.

The activities of this element focus on systematically trapping urban and residential areas and nurseries to determine if GWSS are present. The program maintains an internet map server to quickly map and display discoveries of GWSS.

GWSS is detected by using yellow panel traps that are deployed in 43 counties that are not infested or are partially infested with GWSS. The GWSS are attracted to the trap's bright yellow color and will stick to the adhesive surface. County and state personnel service traps on a regular basis during the trapping season.

Each trap is checked every second or third week and moved to a new location every six weeks. New traps are used as needed. Survey protocols were updated and distributed to each county participant in the spring of 2012.

A yellow panel trap in crape myrtle

Survey/detection and nursery training for County personnel

During 2012, program biologists provided detection training to 356 employees from 40 counties, CDFA employees, and ATP participating nurseries. PDCP biologists assisted county personnel with field surveys and also conducted quality control inspections. These inspections are done to ensure that target insect recognition, trap placement, host selection, servicing schedules, and record keeping are being performed at the desired levels.

Rapid Response

The Rapid Response element of the program involves responding quickly to new GWSS detections in partial or non-infested counties. When one or more GWSS are found in a new area, a delimitation survey is conducted by the county biologists and PDCP staff to determine if an infestation is present and, if so, to identify the boundaries. Treatments in urban and residential areas are applied under the supervision of the County Agricultural Commissioner and funded by the PDCP, using winegrape assessment funds. In agricultural settings, treatments are the responsibility of the grower and must be conducted in a manner approved and supervised by the commissioner.

In 2012, GWSS was found in a few new areas of Madera County. After holding a public meeting, treatments were applied to these areas. In total, GWSS were found in 2012 on approximately 375 residential properties in the partially infested counties of Fresno, Madera, Santa Clara, San Luis Obispo, and Tulare. In response, approximately 3,850 properties (infested plus adjacent) were treated.

Visual surveys are conducted in response to new glassy-winged sharpshooter finds

One GWSS infestation was declared eradicated in 2012. The infestation in the Meridian area of San Jose in Santa Clara County was declared eradicated in December. The last GWSS find in this area was in October 2010. This makes a total of five incipient infestations eradicated in Santa Clara County and 16 statewide since the program's inception.

Pre-Treatment Communication with Stakeholders

Specific steps are taken before an infested area is treated to ensure residents are properly advised and environmental concerns are addressed. A public meeting or other outreach effort for community members precedes treatment in urban and residential areas. This provides residents the opportunity to learn about and discuss the treatment process with program and environmental health specialists. Door-to-door contacts, direct mail, and/or local media sources are used to inform residents of public meetings. Occupants of all properties scheduled for treatment are provided individual, advanced notification of the treatment date and time, information on the material to be used, and a phone number to call for more information. A database of threatened and endangered species is consulted to determine if any listed species are present in the treatment area. The U.S. Fish and Wildlife Service, the California Department of Fish and Game, the California Department of Pesticide Regulation, the California Department of Health Services, and other agencies are notified prior to treatment.

Treatment

Public safety is the Department's number one concern whenever treatments are applied. Program staff and cooperators ensure that only registered materials are applied, in strict compliance with label and other restrictions.

Imidacloprid has proven very effective against the GWSS. It is used in treatment programs in urban and residential settings and can be used for both foliar and soil treatment applications.

The Environmental Monitoring Branch of the California Department of Pesticide Regulation has monitored pesticide treatments to determine resulting residue levels. This information is used by the PDCP to assess application rates and coverage. Sampling results and related monitoring reports are available on the Department of Pesticide Regulation's web site at http://www.cdpr.ca.gov/docs/emon/epests/gwss/.

Foliar spray of a tree in an infested area by a pest control operator

Outreach

It is vital that California's winegrape growers be kept fully apprised of the continuing threat posed to agriculture and the environment by PD and the GWSS. Thus the main objective of the outreach and education effort is to raise awareness about that threat, as well as keep winegrape growers informed about the activities the PD/GWSS Board performs on their behalf. Public awareness leads to public involvement, which in turn leads to earlier detection of infestations and reduced damage from this serious pest and disease complex.

The PD/GWSS Board initiated its outreach and education program in 2004 and has since maintained its communications effort to keep winegrape growers informed about activities that are funded by the winegrape grower assessment. These efforts continued in 2012 with outreach focused in part on informing growers about field trials currently being conducted to test possible solutions to PD and successes in the efforts to eradicate the EGVM. In 2012 a new brochure, a trade show display, and additional video presentations featuring researchers and field trials were produced. The new videos were used in presentations to winegrape growers and industry trade shows around the state.

Outreach keeps growers informed

In 2012 winegrape growers were invited, for the first time, to taste wines made from PD-resistant winegrapes developed at UC Davis. Nearly 300 growers at three different events sampled several different wines and were given a preview of what was to come and how they might work these winegrapes into their growing program in the near future.

In 2012, both the quarterly newsletter and website were redesigned to be more user friendly. The monthly e-newsletter, with current information about PD, GWSS, and EGVM continued to be sent monthly to a list of over 1,000 interested stakeholders, with over 600 of those being California winegrape growers. It has proven useful for getting program information out in a timely manner to all stakeholders. Information from the e-newsletter was often reprinted in many of the wine trade publications verbatim. In addition to the monthly e-newsletter, a quarterly newsletter was produced and mailed directly to California's 7,000+ winegrape growers as well as other stakeholders.

The following materials were prepared or updated in 2012:

- Newsletters (quarterly)
- Web site message board
- Facebook page
- LinkedIn group
- YouTube video channel
- Stock photography
- Large trade show display/exhibit
- Videotaped researcher interviews
- Monthly e-newsletter
- New brochure about research

Local County Outreach

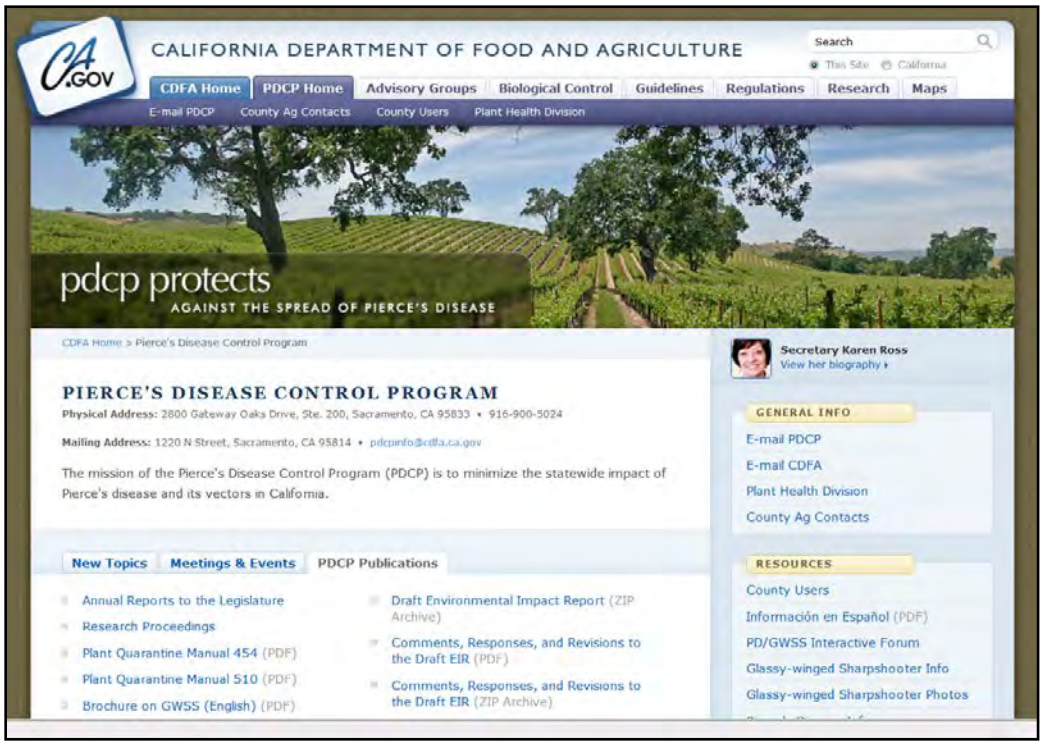
This year, local county agricultural staff and industry members played key roles in maintaining program visibility and stakeholder awareness. County public outreach and education efforts included the distribution of PD and GWSS informational material to local retail, production, and shipping nurseries, landscape companies, and members of the community. Industry trade publications, cooperative extension newsletters, and media interviews also proved to be successful methods of outreach. Many counties participated in continuing education seminars and conducted training for landscapers, pest control operators, nursery employees, and nursery association members.

Media Coverage

In 2012, articles and reports about PD and the GWSS continued to appear in print media, television, radio, and internet web sites. While the coverage mainly focused on newly discovered infestations, the coverage helped to keep the threat on the minds of stakeholders and underlined the fact that PD/GWSS was still a very real threat. There was also coverage in wine industry publications about the PD/GWSS Board funding outreach and education activities directed at the EGVM and the success of those efforts.

Web Site

In March 2000, the CDFA activated a highly successful web site focused on PD and the GWSS. It features information on program activities, survey guidelines, regulatory guidelines, announcements of upcoming meetings and events, the GWSS host list, and other information. In addition, the web site provides an interactive interface that allows direct activity reporting by local entities. This web site is located on the Internet at: www.cdfa.ca.gov/pdcp and in 2012 continued to be used as an effective tool for providing current and reliable information to interested parties.



A snapshot from the Pierce's Disease Control Program's web site

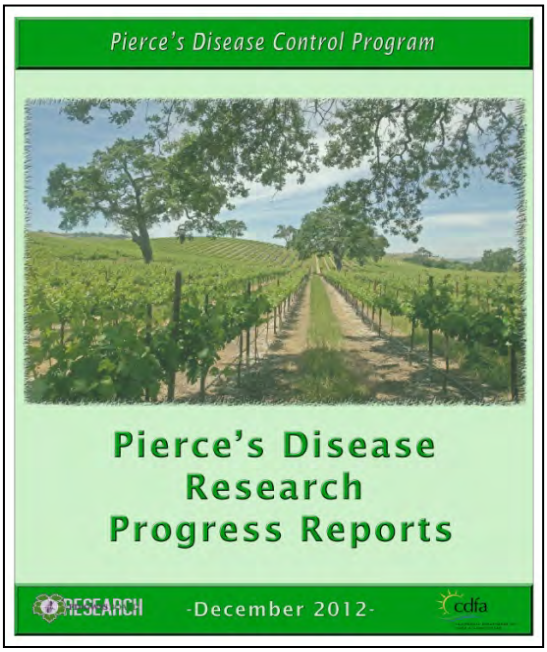
Research

Research continues to be an integral part of the PDCP. In 2012, the flurry of research activity that began at the start of the program continued with approximately 43 projects being worked on by some of the nation's top plant health researchers. Projects ranged from lab-based investigations at the molecular and genomic levels to area-wide projects in major agricultural areas. The information generated provided valuable insight into the biology, ecology, and behavior of PD and its vectors.

The extensive and sustained research effort on PD has yielded discoveries and approaches that show good potential for leading to solutions to this serious disease problem. These include using conventional plant-breeding methods to develop disease-resistant grapevines; using nonvirulent strains of *Xylella fastidiosa* to displace and outcompete pathogenic strains; identifying the mechanisms and processes leading to bacterial infection and spread; and elucidating the biochemical pathways which result in disease symptoms and death. Scientists have developed plant metabolites that block damage-causing pathways and processes, and are experimenting with ways to introduce them into the plants via specially-developed rootstocks, topical applications, and other means. Field testing of these new technologies began in 2010. Looking back, it is clear that solutions are getting very close relative to where we were 13 years ago.

Research Symposium

A PD Research Symposium was not held in 2012. However, as in prior years, a compilation of progress reports on current research projects on PD and GWSS was prepared by the PDCP and made available electronically to scientists and other stakeholders. The document can be accessed on the program's web site. Progress reports and other research-related information are also available on a web site maintained by the Public Intellectual Property Resource for Agriculture (PIPRA), through a partnership with the PDCP.



The 2012 compendium contains 43 research progress reports

Research Proposal Solicitation and Review

In 2012, the PDCP partnered with the Unified Grant Management for Viticulture and Enology Program at UC Davis to conduct its research proposal solicitation and review process. A total of 16 proposals were received and reviewed, with nine research projects totaling $2.1 million selected for funding by the CDFA using winegrape assessment funds. In addition, 13 ongoing projects were approved to receive continued funding in the coming fiscal year.

Area-wide Management Programs

The area-wide management programs coordinate insecticidal treatments in commercial citrus blocks around grapes and other agricultural commodities.

Fresno County

In the summer of 2003, Fresno County implemented area-wide trapping for GWSS in citrus groves. In 2011 traps were added to grapes near the infested area and the San Joaquin River. There were 125 trap finds in citrus and grapes in 2012, compared to 39 in 2011. About 1,130 acres of citrus were treated in 2012, compared to 195 acres in 2011.

Kern County

In 2012, the boundaries of the Kern County infested area remained the same as in 2011. The infested area includes agricultural lands as well as the city of Bakersfield and several smaller Kern County communities. There were 17,465 acres of citrus treated in 2012, compared to 15,465 acres treated in 2011. Despite extensive treatments, significantly more GWSS were trapped in 2012 than in the prior year. This is believed to be due to unusual weather conditions.

Madera County

In 2012 there were five GWSS finds in citrus and grapes, compared to 27 in 2011. About 1,365 acres of citrus were treated in 2012, compared to 500 acres in 2011.

Riverside County

In the Coachella Valley, yellow panel traps placed to monitor ACP activity are also being screened for GWSS. Due to low GWSS activity, no treatments were conducted in 2012.

In the Temecula Valley, a total of 736 acres of citrus were treated. The 2012 treatments were initiated in late April and concluded by June.

Tulare County

The infested area in Tulare County has not expanded since 2004. In 2012, the number of GWSS trapped was slightly lower than in the prior year. Consequently, there were fewer acres of citrus treated in 2012 compared to 2011 (6,707 acres vs. 11,713 acres, respectively).

Biological Control

Biological control is a method of controlling target pests (including insects, mites, weeds, and plant diseases) using other living organisms. Biological control agents used for controlling insect pests include predators, parasitoids, and pathogens.

Since 2001, the PDCP has been using biological control to control populations of the invasive GWSS as an important component of Integrated Pest Management (IPM). The biological control agents of GWSS are tiny parasitic wasps. The female adults lay their eggs inside GWSS eggs. The emerging wasp larvae develop by feeding on the GWSS eggs, eventually killing them. Upon completion of development, the adult wasp emerges from the GWSS egg and repeats the cycle.

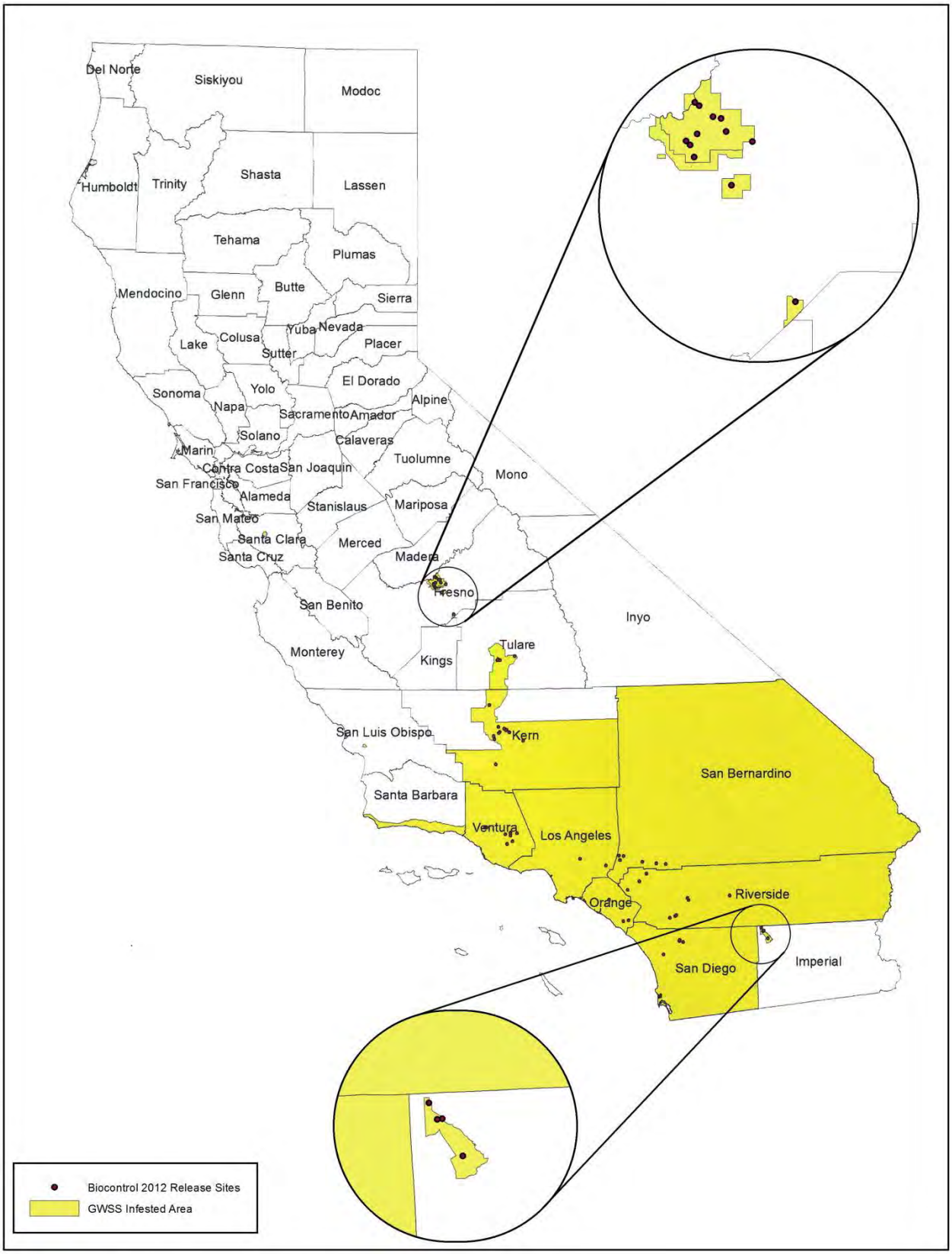
In 2012 four species of GWSS biological control agents were reared and released by the PDCP: *Gonatocerus ashmeadi*, *G. morgani*, *G. triguttatus*, and *G. morrilli*. Among these, *G. ashmeadi* and *G. morgani* are considered native to California (but with varying distribution), whereas *G. morrilli* and *G. triguttatus* were introduced from the southeastern region of North America by UC Riverside and CDFA. All the species are solitary egg parasitoids (only one wasp adult emerging per GWSS egg parasitized) and highly host-specific (i.e., minimal negative impact on non-target organisms or the environment).

Over the past year, the Biological Control Group has monitored 77 sites in 11 counties (Fresno, Imperial, Kern, Los Angeles, Madera, Orange, Riverside, San Bernardino, San Diego, Tulare, and Ventura) throughout southern and central California. At each site, the release of biological control agents and post-release surveys were conducted. The following table presents the number of wasps released in 2012. Since the start of the Program a total of 2.37 million wasps have been released.

In addition to field-release of biological control agents, the Program has also been supplying them to scientists for use in research projects.

County	***G. ashmeadi***	***G. morrilli***	***G. triguttatus***	***G. morgani***	***TOTAL***
Fresno	391	5,832	2,675	2,893	**11,791**
Kern	325	6,323	5,399	3,217	**15,264**
Madera	50	215	1,180	179	**1,624**
Tulare	220	2,777	3,411	2,138	**8,546**
Imperial	370	0	0	0	**370**
Los Angeles	310	100	0	200	**610**
Orange	375	0	0	0	**375**
Riverside	760	0	100	0	**860**
San Bernardino	445	330	460	530	**1,765**
San Diego	270	3	0	0	**273**
Ventura	295	11,055	5,868	10,217	**27,435**
Total (2012)	**3,811**	**26,635**	**19,093**	**19,374**	**68,913**

Biological Control Release Sites



Environmental Compliance

In 2012, the CDFA continued its efforts to ensure that the PDCP is conducted in an environmentally responsible manner. These efforts include adhering to a special notification and consultation process with federal and state environmental stewardship agencies prior to treatment and ensuring that pesticide applications are performed by licensed pest control professionals in strict accordance with pesticide laws and regulations. In addition, the PDCP continued posting notifications of program-related pesticide applications on a CDFA web page in compliance with a permit obtained to meet the requirements of the National Pollutant Discharge Elimination System.

A statewide programmatic environmental impact report (EIR) was released for the PDCP in mid-2003. A legal challenge was filed against the EIR shortly thereafter. Although a trial court found the EIR to be adequate, the State Appeals Court later reversed the trial court's ruling. In 2010, the CDFA contracted with an environmental consulting firm and began preparing the environmental analyses, documents, and risk assessments called for by the Appeals Court. Efforts on this project continued in 2011 and in 2012, it was decided to combine this effort with a similar one being conducted for the Department's statewide Plant Health and Pest Prevention program.

Financial Statement

PDCP

	FY 2011-12 (Actual)	FY 2012-13 (Budgeted)
REVENUE		
Federal (USDA)	$14,474,175	$14,472,876
PD/GWSS Board	$856,763	$1,667,000
Total Revenue	$15,330,938	$16,139,876

EXPENDITURES	FY 2011-12 (Actual)	FY 2012-13 (Budgeted)
Personal Services	$3,145,272	$3,131,490
Operating Expenses	$1,922,722	$1,900,000
Total County Payments	$10,262,945	$11,108,386
Total Expenditures	$15,330,938	$16,139,876

Abbreviations and Acronyms

ACP	Asian Citrus Psyllid
ATP	Nursery Stock Approved Treatment Program
CACASA	California Agricultural Commissioners and Sealers Association
CDFA	California Department of Food & Agriculture
EGVM	European Grapevine Moth
EIR	Environmental Impact Report
GWSS	Glassy-winged Sharpshooter
IPM	Integrated Pest Management
PD	Pierce's Disease
PD/GWSS Board	Pierce's Disease and Glassy-winged Sharpshooter Board
PDCP	Pierce's Disease Control Program
PIPRA	Public Intellectual Property Resource for Agriculture
UC	University of California
USDA	United States Department of Agriculture