



CALIFORNIA DEPARTMENT OF
FOOD AND AGRICULTURE

Plant Health and Pest Prevention Services



**Annual
Report
2004**



March 2005

PLANT HEALTH AND PEST PREVENTION SERVICES

ADMINISTRATION

The California Department of Food and Agriculture's (CDFA) Plant Health and Pest Prevention Services (PHPPS) mission is legislatively mandated and clearly articulated within the California Food and Agricultural Code. The California Legislature, in enacting this mandate, also recognized that pest prevention is uniquely positioned to protect California's urban and natural environments as well as its agriculture. It specifically instructs the CDFA to protect ornamental and native plantings as well as agricultural crops from the harm caused by exotic pest invasions. These mandates serve as the basis for the pest prevention program's mission, vision, values, and goals statement:

Mission: *Protect California from the damage caused by the introduction or spread of harmful plant pests.*

Source – California Food and Agricultural Code, Sections 24.5, 403, 5006, 5301, 5322, 5761

Vision: To provide leadership of pest prevention and management programs that effectively protects California's agriculture, horticulture, natural resources, and urban environments from invasive plant pests.

Values:

- Leadership: Provide clear direction, guidance and support.
- Communication: Open, constructive exchange of ideas, opinions and information.
- Decision: Decision-making based on the best available science, technology, and common sense.
- Team Work: Accomplishing division goals through the cooperative efforts of each of our employees.
- Credibility: A team that maintains the division as a responsive, accountable, and trusted organization.
- Development: Maintain a system that develops employees, expands capabilities, acquires and utilizes accurate information and new technologies, while employing innovative pest prevention strategies.

Goals: To prevent the entry, spread and establishment of invasive plant pests that could be detrimental to the State's agriculture, public, or natural resources by:

- Accurate and timely pest identification;
- External and internal exclusion activities designed to prevent pest entry or establishment;
- Early detection of plant pests before they become well established;
- Timely and effective eradication actions to eliminate new pest infestations;
- Control and containment systems for plant pests that have become widely established;

- Research, information technology, and pest risk analysis systems to assure that the pest prevention program is relevant, scientifically based, and continuously improved;
- Maintain outreach programs to enlist public support of pest prevention activities through enhanced public awareness and education; and
- Development of division employees, foster teamwork and a sense of accomplishments and enjoy our work.

In California, a series of federal and state plant quarantine laws and regulations are enforced to restrict the entry and movement of commodities capable of harboring targeted plant pests and enable our eradication and control efforts. This approach of prohibiting or restricting the movement of plants, plant products, or other commodities capable of harboring exotic plant pests is done in the interest of food security. In this case, the public insurance of a safe and secure supply of food and fiber is based on the premise that it is more economically and environmentally-sound to prevent the entry and establishment of dangerous plant pests than to live with them.

Along with the United States Department of Agriculture (USDA), PHPPS actively participates in the development of standards for pest prevention under the International Plant Protection Convention. The PHPPS Division is also a sustaining associate member of the North American Plant Protection Organization (NAPPO), a regional trade organization that develops pest prevention standards for the three country members—the U.S., Canada, and Mexico. California industry representatives are active participants in NAPPO panel committees and its Industry Advisory Group.

PERMITS AND REGULATIONS

The permits and regulations program develops all regulations administered by the Division of Plant Health and Pest Prevention Services and develops associated legally required documents such as notices, statements of reason, orders and certificates of compliance. The Special Assistant serves as regulatory coordinator for the Division and technical staff assistant to the Director.

This program issues state permits involving agricultural pests, approved laboratories, soil and quarantine commodities as authorized under administrative regulations and the Food and Agricultural Code. In addition, this program approves or disapproves applications for federal permits that are issued by the United States Department of Agriculture (USDA). These permits concern movement into California of foreign and domestic plant pests, foreign soil, foreign postentry quarantine plant material, genetically engineered organisms (biotechnology permits), and foreign plants and plant products normally prohibited entry into the United States.

The primary activities of the permits and regulations program during the 2004 calendar year were:

State Permits

There were 382 state permits issued including 88 plant pest permits (54 for pathogens, 34 for arthropods), 284 quarantine commodity permits, two biotechnology movement authorizations and 8 approved laboratory permits.

Federal (USDA) Permits

A total of 581 applications for federal permits were reviewed and processed including 33 postentry quarantine agreements, 13 soil permits, 200 plant pest permits (104 for pathogens, 96 for arthropods), 314 biotechnology permits, and 21 permits for federally prohibited plant material.

Regulations

There were 73 regulatory actions completed that included the adoption, repeal or amendment of 51 regulations; 15 certificates of compliance; and 21 notices of changes in the regulations.

ENVIRONMENTAL COMPLIANCE

The Environmental Compliance program exists to ensure that all PHPPS pest prevention programs are in compliance with all applicable environmental protection laws and regulations. It does this by:

- Keeping aware of environmental mandates.
- Preparing and/or reviewing scientific and legal documents.
- Facilitating scientific debate of environmental issues.
- Developing and defending environmental compliance strategies.
- Representing PHPPS with other governmental agencies.
- Advising PHPPS division on environmental compliance mandates.

Environmental Compliance Reports and Projects

- Provided support for the Attorney General's office in defending against a lawsuit challenging the Pierce's Disease Control Program EIR and the subsequent appeal of the decision of the Superior Court in favor of CDFA.
- Began the process of developing a new EIR for the Exotic Pest Eradication Program, a proactive environmental review of all potential projects involving invasive pest infestations.
- Participated in regulatory compliance for various invasive weed control programs.
- Prepared environmental documentation for several exotic fruit fly eradication projects.
- Reviewed new and ongoing litigation on issues pertinent to the Division regarding pesticide use and water quality.
- Participated in the development and approval of various studies required by the U.S. Fish and Wildlife Service for the Division's Curly Top Virus Control Program.
- Revised and expanded the Division's ability to comply with endangered species laws.
- Provided information about environmental compliance and environmental law to individuals and groups in the Division.

Branches in Plant Health and Pest Prevention Services

The Plant Health and Pest Prevention Services Division is comprised of four branches and is responsible for protecting California's agriculture and natural resources against damage caused by exotic and recently introduced plant pests. It provides this protection through a comprehensive pest prevention system. This system is administered by three organizational branches: Pest Exclusion, Pest Detection/Emergency Projects, and Integrated Pest Control. These branches are provided professional support by the scientists in the Plant Pest Diagnostics Branch.

The **Pest Exclusion Branch** is considered our first line of defense. The mission of the Pest Exclusion Branch is to keep exotic agricultural and environmental pests out of the state and to prevent or limit the spread of newly discovered pests within the state. To accomplish this mission, the Branch has two roles: 1) quarantine regulatory compliance and enforcement and 2) service to the agriculture industry and the public. The branch is divided into three program components: Interior Pest Exclusion (enforcement of quarantines, phytosanitary certification of exports) , Exterior Pest Exclusion (border stations), and Nursery, Seed and Cotton (licensing, pest cleanliness, registration and certification, truth in labeling (seeds) and quality cotton).

The **Pest Detection/Emergency Projects Branch** is responsible for the early detection and prompt eradication of serious exotic agricultural pests. The Branch accomplishes its mission by conducting a statewide trapping program, staffed by county and state inspectors, for exotic insect pests; by implementing special surveys for significant agricultural pests and plant diseases for which traps are not available; and by providing emergency eradication services using the best available technology.

This Branch also operates the CDFA Fruit Fly Rearing Facility, located in Waimanalo, Hawaii, which provides high quality sterile Medflies for eradication projects in California. Maximum production can reach up to 125 million flies per week.

The **Integrated Pest Control Branch** conducts a wide range of pest management and weed eradication projects in cooperation with growers, agricultural commissioners, and federal agencies. The biological control and vertebrate pest management functions are managed by this Branch. Assessments and fees are collected for some program activities and services. The Branch contracts with counties, federal agencies, other California state agencies, research agencies, and private businesses for various program components. Activities of five projects are coordinated through recommendations of three boards (Pink Bollworm, Beet Curly Top Virus, Tristeza) and two committees (Noxious Weed Management Oversight Committee and Vertebrate Pest Control Research Advisory Committee).

The **Plant Pest Diagnostics Branch** provides professional plant pest diagnostics support for CDFA's agricultural plant pest prevention regulatory programs, the United States Department of Agriculture, county departments of agriculture, universities, phytosanitary certification of California export products, other state agencies, and the general public. The branch consists of five laboratories including botany, entomology, nematology, plant pathology, and seed taxonomy and germination.

PEST EXCLUSION BRANCH

INTERIOR PEST EXCLUSION

The mission of the Interior Pest Exclusion Program is to prevent the introduction and spread of harmful and invasive plant pests, and to maintain and expand market access for California agricultural products. Harmful and invasive exotic pests are a major threat to California's agricultural industry, and pest exclusion is the cornerstone of pest prevention. In many instances, exclusion is the first, last and only means to keep exotic pests from invading California. Federal and state enacted quarantines, as well as county ordinances, help protect the State from exotic pests. Enforcement of these quarantines is accomplished through direct inspection of arriving commodities and by treatment, destruction or return to shipper when pests contaminate the commodity. Interior Pest Exclusion provides regulatory oversight, training, and direction to the county agricultural commissioner's office according to the Pest Exclusion mission.

Interior Pest Exclusion Program works cooperatively with the USDA to enforce federal plant pest quarantines. Interior Pest Exclusion also cooperates with the United States Department of the Interior, the United States Customs Service, and the California Departments of Fish and Game, Forestry and Fire Protection, Public Health, and Pesticide Regulation to enforce their respective regulations.

To promote California agricultural commodities in foreign and domestic markets, Interior Pest Exclusion maintains a close working relationship with the USDA to facilitate the export of California's products worldwide by providing up-to-date pest risk assessments on locally grown commodities. Additionally, Interior Pest Exclusion works cooperatively with agricultural officials in other states to determine the best pest mitigation measures that will allow the movement of pest-free commodities into California.

Interior Pest Exclusion activities include:

- ◆ Quarantine Response
 - ◆ Emergency response to a pest infestation
 - ◆ Quarantine response to a pest incident
- ◆ Quarantine Training, Direction, Oversight, and Consultation
- ◆ Quarantine Enforcement
- ◆ Trade Facilitation
- ◆ Commodity Treatment Coordination and Consultation
- ◆ Data Collection and Information Management

Following are highlights for the year 2004.

Quarantine Response

Emergency Response to a Pest Infestation

When a reproductive population of a pest is discovered in California, an infestation is declared. Interior Pest Exclusion responds by enacting emergency pest abatement and control measures to contain the infestation and determine effective commodity host treatments that facilitate movement to market. Emergency regulatory responses are coordinated with USDA if the pest is a federal action pest. In 2004, emergency responses were conducted for infestations of Oriental fruit fly, sudden oak death, and red imported fire ant.

Oriental Fruit Fly, Upland/Ontario. In May 2004, an Oriental fruit fly quarantine, which had been in place since October 2003, was lifted in the Upland/Ontario area of Los Angeles and San Bernardino counties. The 137 square mile project included areas surrounding Ontario International Airport, the cities of Rancho Cucamonga, Upland, Claremont, Montclair and Chino in San Bernardino County, and a portion of Pomona in Los Angeles County. The quarantine area included both urban and agricultural areas. Over 307 businesses were affected and operated under program compliance agreements. Hold Notices were issued to 64 businesses/properties within the quarantined area to prevent movement of fruit fly host materials. Interior Pest Exclusion Staff supervised quarantine certification treatments by 31 growers. Commodities treated were avocado, citrus, chili, cucumber, figs, guava, kumquat, lemon, loquat, orange, quince, stone fruit, tangerine and tomato. The quarantine was lifted after three life cycles of the Oriental fruit fly were completed with no new fly detections.

Oriental Fruit Fly, Santa Ana, Orange County. In the summer of 2004, an Oriental fruit fly quarantine was established in the Anaheim, Santa Ana, Tustin, and Irvine areas of Orange County. The quarantine area is approximately 116 square miles, in primarily an urban area. Over 772 businesses/properties in the quarantined area were operating under compliance agreements. Affected businesses include produce markets, fruit packing facilities, flea markets, swap meets, farmers' markets, landscaping companies, and community gardens. Interior Pest Exclusion staff activities include monitoring growers' treatments, site visits, public outreach and regulatory enforcement. A total of 218 acres of avocado, lemons, oranges and row crops were treated. Hold Notices were issued on 167 businesses/properties within the quarantined area to prevent movement of fruit fly host materials. This quarantine was on track to be lifted early 2005.

Oriental Fruit Fly, Westchester, Los Angeles. In September 2004, an Oriental fruit fly quarantine was established in the Westchester area of Los Angeles County. The quarantine area was approximately 67 square miles and primarily in an urban area that included the Los Angeles International Airport (LAX). Affected businesses included produce markets, wholesale produce distributors, fruit packing facilities, swap meets, farmers' markets, nurseries, landscaping companies and community gardens. Over 200 businesses were affected and operated under compliance agreements. Hold notices were issued on 18 properties in the area. At LAX, 9 catering companies, 40 cargo warehouses, and 57 airlines operated under Department of Homeland Security (DHS)-Customs and Border Protection (CBP) and USDA-Plant Protection and Quarantine compliance. Interior Pest Exclusion staff worked in cooperation with staff of the DHS-Transportation Security Administration and CBP to ask outbound passengers from LAX to leave homegrown fruit fly host materials originating within the quarantine area. The quarantine was lifted after three life cycles of the Oriental fruit fly were completed with no new fly detections.

Red Imported Fire Ant. Federal and state quarantines regulate areas of California for the Red Imported Fire Ant (RIFA). Currently, there are 866 square miles in the quarantine area including the entire county of Orange and parts of Riverside and Los Angeles counties. The RIFA has also been discovered in areas outside the regulated areas. Interior Pest Exclusion implemented regulatory actions and eradication treatment programs in the following counties outside the quarantined areas:

Fresno	Merced	San Diego
Kern	Riverside	Santa Barbara
Los Angeles	Sacramento	Stanislaus
Madera	San Bernardino	

Regulatory enforcement of the quarantine was accomplished using compliance agreements with businesses or individuals within the quarantine areas that commercially grow, produce, propagate, handle, store, maintain, ship, transport or process regulated articles or commodities. Establishments that are in regulatory compliance followed approved treatment procedures to ensure RIFA-free status for the articles or commodities intended for shipment. Inspection surveys, treatment records, and activities of these establishments were monitored in 2004 to ascertain that applicable protocols of inspection surveys, treatment procedures and information records are done in accordance with the compliance agreement. The categories of compliance agreements include: production nurseries, non-production or retail nurseries, landscapers, yard maintenance, golf courses, sod farms, bee-keepers, soil movers, homeowners, hay dealers/handlers, green waste recyclers and landfills. Interior Pest Exclusion signed 849 new compliance agreements in 2004 bringing total establishments being monitored by the program to 4,665.

The number of compliance agreements for nurseries, sod farms and golf courses has leveled off, but there continues to be an increase in the numbers of new compliance agreements in other high-risk categories such as landscapers, yard maintenance, soil movers.

The primary focus of RIFA quarantine enforcement is to ensure the movement of RIFA-free nursery stock by placing production nurseries under a compliance agreement. In 2004, Interior Pest Exclusion staff conducted 1,039 (70%) SPAM-bait/visual inspection surveys in production nurseries (Figure 1), in addition to 2,965 soil site inspections for construction/ swimming pool installations. To ensure compliance to Interior Pest Exclusion procedures, the goal is to inspect 100% of quarantined production nurseries in each quarter. This goal was 99.9% accomplished for each quarter in 2004.

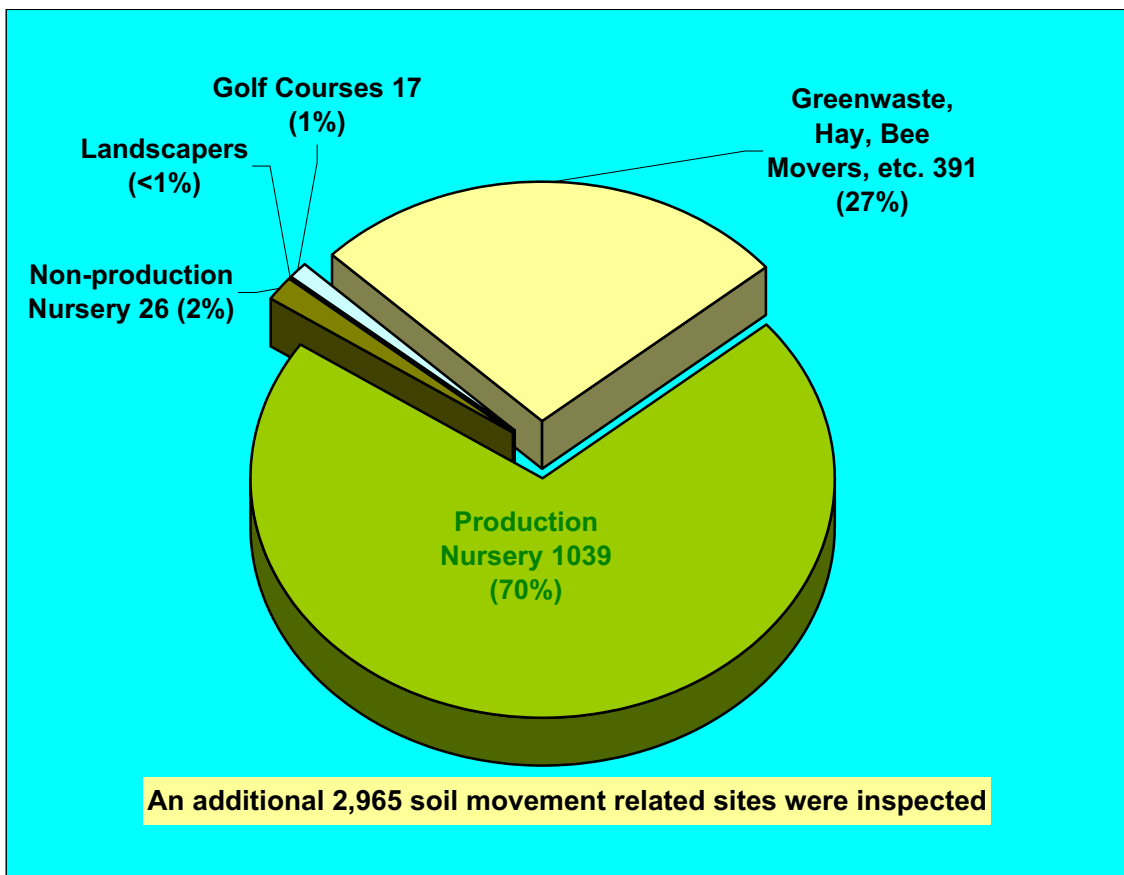


Figure 1. RIFA inspection surveys in 2004 (number, percentage of total)

Since inspections began in October 1998, RIFA has been found in 64 nurseries. A total of fifty-three (83%) of these nurseries completed the required four consecutive treatments and negative quarterly surveys and were removed from the positive nursery classification (Figure 2). Currently only 11 nurseries (17% of the total infested nurseries) are under eradication bait treatment. All nurseries within the quarantined areas are being monitored and surveyed using SPAM® bait traps. All nurseries within the quarantined area continue to treat all nursery stock by drenching or incorporating pesticides in the soil mixture to comply with federal domestic and California State Interior Pest Exclusion RIFA quarantine requirements.

Regulatory inspections of establishments other than nurseries resulted in RIFA finds in one soil-movement related site and 7 golf courses. Each of the RIFA positive sites was broadcast-bait treated and was monitored according to program protocol.

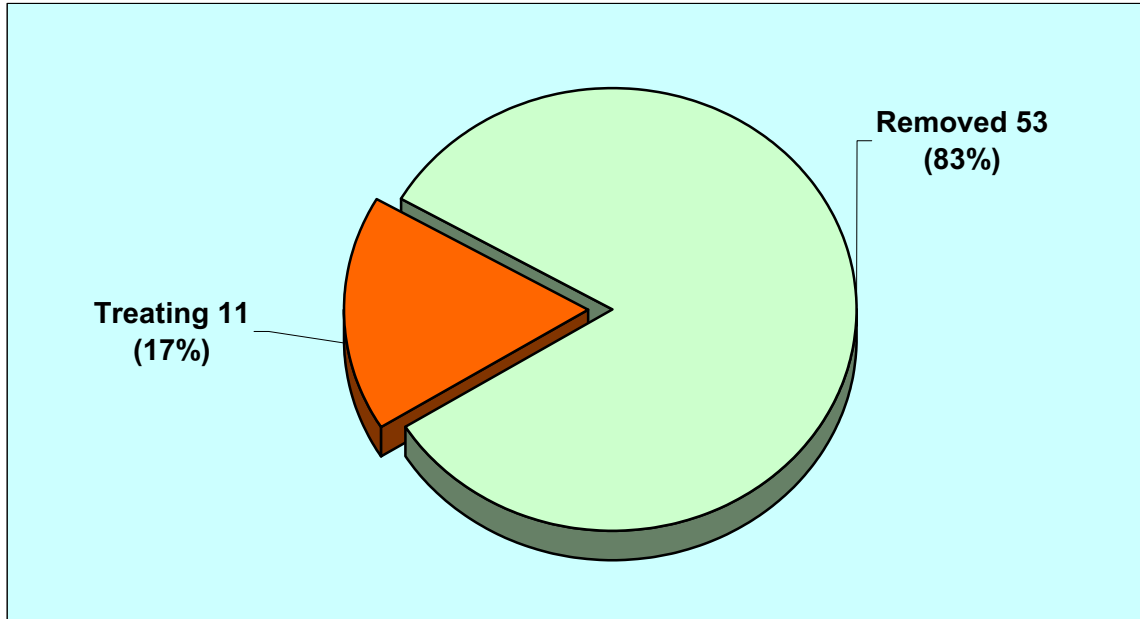


Figure 2. RIFA eradication in nurseries (number, percentage of total) in 2004

The Arizona Department of Agriculture (ADA) and CDFA continue to use a Master Permit Agreement as authorization for the shipment of nursery stock from California to Arizona. This agreement allows RIFA-free nurseries located within the quarantine area to ship nursery stock into Arizona without being held in a special ADA approved quarantine holding area. There are 17 nurseries (approximately 1,524 acres) participating under the terms of this Master Permit at the end of 2004.

Sudden Oak Death. Interior Pest Exclusion has a lead role in administering the Cooperative *Phytophthora ramorum* Quarantine Project. The Project is a cooperative effort between state, federal, and county agencies for the purpose of enforcing state and federal regulations for the control of *P. ramorum*, the causal agent of sudden oak death (SOD). Interior Pest Exclusion developed Project compliance agreements and individual exhibits for nine types of regulated establishments including nurseries, green waste facilities, compost facilities, and fire wood dealers. A total of 303 businesses were placed under compliance agreement. All *P. ramorum* associated host plants were added to the regulation resulting in a total of 68 plants under regulation. Two additional counties were added to the quarantine in 2004, making the total number of California counties quarantined for *P. ramorum* to 14.

During a statewide nursery survey for SOD in the spring of 2004, plant samples collected from 6 of 88 nurseries surveyed, tested positive for *P. ramorum*. Interior Pest Exclusion staff implemented a SOD eradication protocol at the infected nurseries.

An Emergency Federal Order was issued in March and amended in December 2004 to regulate the interstate movement of nursery stock of hosts and associated hosts of SOD from 44 California counties not considered infested with the disease. The remaining 14 counties in California were not included in the Federal Order, because the movement of nursery stock and other commodities from those counties were already regulated in the Federal Domestic Quarantine for *Phytophthora ramorum* (CFR 301.92).

The Federal Order required inspection, sampling, and testing of hosts and associated hosts of nursery stock for the presence of *P. ramorum*, the causal agent of SOD, at all nurseries that ship designated materials interstate. It also required the inspection of non-host plants for those nurseries that shipped interstate. By the end of 2004, there were 184 nurseries under compliance to meet the Federal Order.

Quarantine Response to a Pest Incident

When pests are discovered in arriving commodities, Interior Pest Exclusion responds by taking immediate action to contain the pest and eliminate the risk of the pest escaping and becoming established in the State. The immediate action, conducted in cooperation with the local county agricultural commissioner's office, is to locate and dispose of the entire infested commodity. Additionally, investigations are conducted to determine the extent of distribution in the State of the infested commodity, to determine how the commodity became infested, and to determine if certification or other pest cleanliness procedures must be implemented or corrected at origin to prevent similar incidents in the future. The following are some of the pest incidents in 2004:

Sudden Oak Death in Nurseries. In the spring of 2004, State, federal, and county agricultural inspectors conducted a statewide survey of nurseries for Sudden Oak Death. During the survey, *Phytophthora ramorum*, the causal pathogen of Sudden Oak Death (SOD), was detected on *Viburnum* sp. and several varieties of *Camelia* sp. at six nurseries located in five counties. Interior Pest Exclusion, federal, and county inspectors placed several lots of the host plants on hold at the infested nurseries and implemented USDA's *P. ramorum* Confirmed Nursery Protocol. Over one million host plants were destroyed. Trace forward and trace back investigations were conducted at 801 locations and *P. ramorum* was not detected. Water, potting media and soil tests of the nurseries also tested negative for *P. ramorum*. By August 2004, the nurseries had been declared free of *P. ramorum* and remain under "Post Eradication Monitoring" program for two years, in accordance with program protocol.

Citrus Canker in Smuggled Citrus Budwood from Japan. In April 2004, CDFA was notified by USDA/APHIS that their Safeguarding, Intervention and Trade Compliance Program intercepted prohibited citrus budwood from Japan at a postal facility in Daly City, San Mateo County. The package was declared as "books and chocolates". The USDA laboratory in Beltsville, Maryland, determined that the intercepted budwood was infected with *Xanthomonas axonopodis pv citri*, the causal agent of citrus canker. The shipment was addressed to the residence of a commercial nursery caretaker in Ventura County. Interior Pest Exclusion, USDA and county agricultural staff conducted a joint inspection at the recipient's nursery and residence. During the inspection, more than 3,600 pieces of grafted citrus plants were found and placed on hold. It was alleged that the owner had grafted the rootstock with Japanese citrus budwood (Figure 3). The USDA issued a Destruction Order for all the grafted citrus plants suspected of being propagated using smuggled citrus budwood. Consequently, all citrus plants at the nursery and residence of the shipment receiver were destroyed in accordance with the USDA order, with assistance from the Ventura County Fire Department (Figure 4).



Figure 3. Citrus plant with smuggled Japanese budwood



Figure 4. Smuggled citrus plants burnt by Ventura County Fire Department

Chrysanthemum White Rust Incidences in Ventura and Santa Barbara Counties. In January 2004, Ventura County agricultural staff notified CDFA of cut chrysanthemum plants in a greenhouse showing symptoms of Chrysanthemum White Rust (CWR), a federally regulated disease. Suspect specimens were confirmed by CDFA Plant Pest Diagnostics (Pathology) Laboratory, as *Puccinia horiana*, the casual agent of CWR. In collaboration with USDA and Ventura County agricultural staff, Interior Pest Exclusion biologists inspected the three greenhouses of the grower and found localized CWR infections in one greenhouse. The CWR National Management Plan for Exclusion and Eradication was adopted. The plan includes disposal of all plants within one-meter radius of infected plants, three myclobutanil fungicide treatments, 100% inspections of all plants in the greenhouse, between and at the end of treatments, and a 400-meter door-to-door survey around the infected nursery. Interior Pest Exclusion staff traced back and inspected sources of the infected plants. No CWR or its symptoms were detected.

Also in January 2004, an incidence of CWR infection was confirmed at a nursery in Santa Barbara County. Representatives of the USDA, CDFA and Santa Barbara County agricultural commissioner's office inspected the nursery and found the CWR infestation to be localized. Interior Pest Exclusion adopted the CWR National Management Plan for Exclusion and Eradication. Trace back inspections in Ventura and San Luis Obispo counties were negative for CWR.

In November 2004, three incidences of CWR were confirmed in Santa Barbara County. Representatives of USDA, CDFA and the county agricultural commissioner's office inspected the six growing grounds owned by the affected three growers. Localized infections of CWR were found in the six growing grounds. Interior Pest Exclusion implemented the CWR National Management Plan for Exclusion and Eradication. Trace back inspections were negative for CWR.

Mexican Fruit Fly On Board Vessel, Port of Long Beach. The USDA Safeguarding, Intervention and Trade Compliance Program (SITC) notified CDFA that a wild, sexually immature, unmated female Mexican fruit fly was found by DHS-Customs and Border Protection on board a ship that had recently docked in Lazaro Cardenas, Mexico. Pest Exclusion and USDA-SITC officers inspected the vessel at the Port of Long Beach. A fly pupa was additionally found in the ship's stores area. Both suspect fly samples were submitted to CDFA Plant Pest Diagnostics Laboratory, where the fly was confirmed as Mexican fruit fly, *Anastrepha ludens*, and the pupa as exotic fruit fly, probably Mexican fruit fly. The vessel carries wood and steel products between the Port of Long Beach, Los Angeles County and Lasaro Cardenas, Mexico.

Receipts of recent fruit fly host material purchases were collected from the vessel crew. All host materials on board were double bagged, sealed and destroyed. On board the ship, recently purchased fruits from the Los Angeles wholesale market were inspected and were pest-free. The source of the flies remains unclear since neither the adult nor pupa was found in association with a host.

Asian Soybean Rust. In November 2004, the USDA announced the first confirmed detection of Asian soybean rust (ASBR) in the United States in two experimental production plots at Louisiana State University. The USDA/APHIS coordinated further surveys for ASBR in other states considered at high risk for the disease. Following the survey, ASBR was confirmed on soybeans in nine states: Alabama, Arkansas, Florida (on kudzu), Georgia, Louisiana, Mississippi, Missouri, South Carolina, and Tennessee. Soybean rust is caused by two fungal species, *Phakopsora pachyrhizi* and *Phakopsora meibomia* and is currently a Q-rated pest in California. In addition to soybean (*Glycine max*), numerous other leguminous crops and weeds, including vetch (*Vicia dasycarpa*), lupine (*Lupinus hirsutus*), sweet clover (*Melilotus speciosus*), green and kidney beans (*Phaseolus vulgaris*), lima and butter beans (*Phaseolus lunatus*), cowpeas or black-eyed peas (*Vigna unguiculata*), and kudzu (*Pueraria montana* var. *lobata*) are hosts. Interior Pest Exclusion worked with county agricultural inspectors to develop awareness and increased monitoring of ASBR on incoming host plants.

Indian Pinecone Seizure and Destruction. In February 2004, the USDA issued an Emergency Action Notice requiring the seizure and destruction of all India-origin potpourri packages with specific product brands and UPC/SKU numbers. The USDA had earlier in December 2003 ordered a national recall of potpourri containing pinecones from India due to the detection of live Cerambycid beetle larvae, *Chlorophorus strobilicola*. In California, live Cerambycid beetle larvae were found in potpourri packages in Alameda, Fresno, Los Angeles, Orange, and Imperial counties by county agricultural and USDA/SITC inspectors. Live Bostrichid beetle larvae were additionally extracted from the pinecones in Butte, Fresno and Tulare counties. The USDA/SITC officers led the recall, seizure, and destruction efforts with distributors identified as having received infested potpourri lots. The CDFA Interior Pest Exclusion staff issued an advisory to all county agricultural commissioners listing all companies, product brands, UPC and SKU codes involved in the recall and coordinated with USDA and county agricultural officers in enforcing the recall.

Chinese Rustic Twig Towers. In the summer of 2004, the USDA issued a national recall of Rustic Twig Towers from China due to the presence of live Cerambycid beetle larvae, *Chlorophorus strobilicola*, in the twigs. The USDA/SITC was the lead agency in this recall effort in California, and concentrated their efforts on the importers, distributors, and large chain markets. Interior Pest Exclusion and county agricultural staff conducted inspections at the smaller markets and the larger independent markets.

Giant Salvinia (*Salvinia molesta*) in San Diego County. Interior Pest Exclusion continued work with staff of the Integrated Pest Control (IPC) Branch and the county agricultural commissioner's office to regulate two properties in San Diego where *Salvinia molesta*, a federal noxious weed, was detected in 2003. The infestations were discovered in ponds on the grounds of a school and at a nursery. The ponds do not drain into any natural waterways. Eradication of the infestations were coordinated by the IPC Branch, and Interior Pest Exclusion staff monitored the treatments at the locations until eradication was completed in the spring of 2004. Eradication efforts included draining the ponds, removal of plant debris, and the application of herbicides under regulatory supervision.

Hydrilla verticillata in Los Angeles County. In March 2004, Interior Pest Exclusion received notification from the Los County Agricultural Commissioner's office that an aquatic noxious weed was found in a nursery during inspection. The weed was later identified by CDFA Plant Pest Diagnostics Laboratory as *Hydrilla verticillata*, an "A"-rated, federal noxious weed. Hydrilla is an invasive non-native aquatic plant that can multiply quickly and replace native vegetation. Representatives of Interior Pest Exclusion, IPC, and the Los Angeles County Agricultural Commissioner's office conducted a joint inspection. The Hydrilla plants were removed and destroyed. Follow-up inspections were done according to the protocol. Trace forward inspections were conducted in Santa Barbara, Ventura and Los Angeles counties; no hydrilla was found.

Exotic Mealybug, *Delottococcus sp.* in San Luis Obispo. In August 2004, Interior Pest Exclusion and the San Luis Obispo County Agricultural Commissioner's office staff regulated a nursery where an exotic mealybug (*Delottococcus sp.*), a "Q"-rated pest, was found on Proteas. The mealybug was determined to belong to a South African complex of the species. Eradication of the infestations involved treatment with Malathion over a 30-day period and re-inspection. Interior Pest Exclusion staff will monitor the treatments at the location until eradication is complete. Trace back inspections of the plants are ongoing.

Indian Swampweed, *Hygrophila polysperma*, in Sutter County. In the fall of 2004, Interior Pest Exclusion received notification from the IPC Branch that Indian Swampweed, *Hygrophila polysperma*, a "Q"-rated, aquatic noxious weed, was detected at an aquarium shop in Sutter County. Representatives of Interior Pest Exclusion and the Sutter County Agricultural Commissioner's office inspected the shop and found *H. polysperma* in holding ponds with turtles and fish, behind the store. There was no documentation with the seller's name and address. All *H. polysperma* were seized and placed in plastic bags and transported to the county agricultural commissioner's office where they were dried prior to deep burial at a local landfill.

Infested Rambutan Fruits From Hawaii. In December 2004, a shipment of over 3,000 pounds of irradiated rambutan fruits heavily infested with "Q"-rated ants, *Technomyremex albipies* and *Pheidole megacephala*, was rejected at a FedEx terminal in Los Angeles County. Interior Pest Exclusion worked with the Los Angeles County agricultural commissioner's office to safeguard and return the shipment to the shipper in Hawaii.

Trace Element Analysis Project. Interior Pest Exclusion biologists worked with the USDA SITC Program in collecting and submitting fruit for the Trace Element Analysis Project. This project is designed to collect fruits grown in several different locations within the State of California for submission to the Center for Analytical Chemistry to conduct trace element analysis. The data collected will be used to differentiate illegal fruits from California grown fruits. Eight target fruits including guava, mango, longan, lychee and avocado have been selected for this project. Biologists also coordinated efforts with Florida-USDA to obtain Florida-grown fruit for the project.

Quarantine Training, Direction, Oversight, and Consultation

Each county agricultural department provides the necessary staff to perform pest exclusion inspections at many locations within California. Interior Pest Exclusion provides training, direction, oversight, and consultation to each county agricultural commissioner's office in order to ensure uniform inspection procedures throughout the State.

Interior Pest Exclusion conducted 19 regional training sessions for 317 county staff from 39 different counties during 2004. Topics included chrysanthemum white rust, sudden oak death, glassy-winged sharpshooter, nematology, quarantine certification examinations, Pest Damage Record training, exotic fruit identification, exotic fruit fly information, market inspection procedures, exotic fruit fly rapid response, and new quarantine regulations established for new pests such as sapote fruit fly and emerald ash borer. Within the year, Interior Pest Exclusion staff partnered with the University of California in conducting “First Detector Training” and certified over 210 county agricultural and CDFA staff.

Regional Training Sessions

Training Category	Sessions	Counties Served	Participants
Quarantine	9	25	257
Phytosanitary	10	14	60
Totals		39	317

Interior Pest Exclusion provides direction and information to county agricultural departments by issuing documents such as Pest Alerts, Pest Exclusion Advisories, and Phytosanitary Advisories. There were 62 of these documents issued in 2004.

Documents Issued by Interior Pest Exclusion

Document	Number Issued	Purpose
Pest Alerts	1	To relay urgent information regarding infested shipments
Pest Exclusion Advisories	36	To advise of specific handling, inspection, or treatment protocols for specific situation
Phytosanitary Advisories	25	To relay import information regarding the certification requirements of other states

Interior Pest Exclusion also provides consultation to agricultural officials in other states, the USDA, the agricultural industry, and the general public. Interior Pest Exclusion advises on issues relating to quarantine enforcement, interpretation of regulations, and methods of certification and inspection.

Most of the consultations performed by Interior Pest Exclusion biologists were through inquiries received via telephone or electronic mail. The majority of the inquiries are from county agricultural commissioner’s staff and CDFA district offices. Figure 5 illustrates the percentages of each type of consultation handled by Interior Pest Exclusion staff.

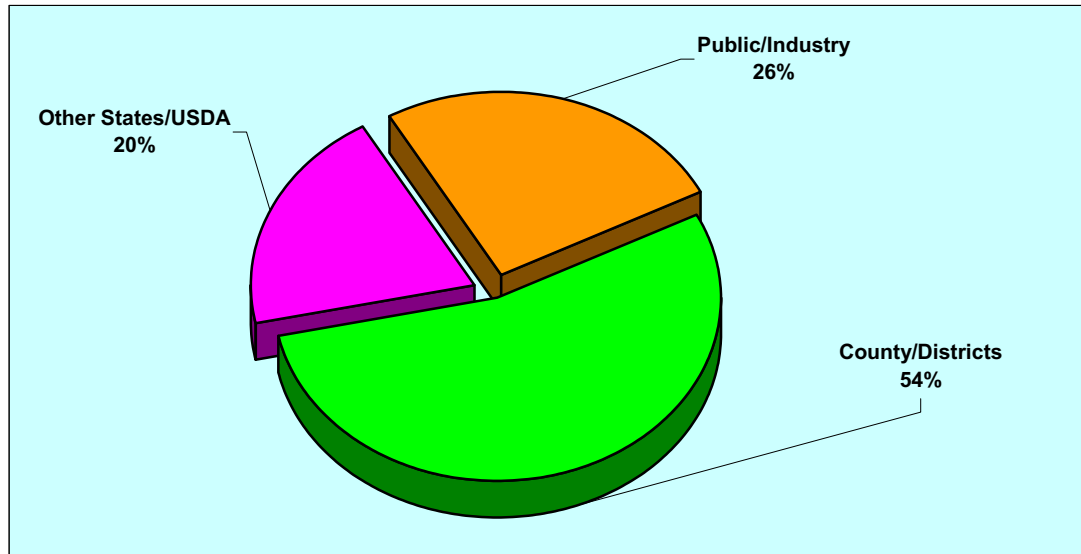


Figure 5. Quarantine Consultations Conducted by Interior Biologists in 2004

General Information on the Internet. Interior Pest Exclusion utilizes the Internet to publish quarantine and pest prevention information. Information on the website includes current exotic fruit fly quarantines, sudden oak death regulations, frequently asked questions for travelers, and the Plant Quarantine Manual (a summary of all the state, federal, and county restrictions and quarantines affecting agricultural commodities entering the State). Additionally, a password-protected site is used to communicate important regulatory information to county and border station inspectors.

Quarantine Enforcement

Interior Pest Exclusion is responsible for the enforcement of California's plant pest quarantines by conducting routine inspections of all incoming shipments of agricultural commodities and all plant material. Commodity shipments arrive in our state via cargo ship, airplane, railcar, and truck. Routine port and terminal point inspections help keep California pest-free. These inspections are done cooperatively with the USDA and with help from the local county agricultural commissioner's staff.

Port and Terminal Inspections. Interior Pest Exclusion is responsible for inspecting domestic aircraft, second port-of-call foreign and domestic vessels, crew quarters, and passenger baggage and cargo shipments for pests detrimental to California agriculture at the ports of San Pedro, San Francisco, and San Diego. Additional responsibilities are to enforce aircraft and vessel garbage regulations; issue permits to remove food stores from vessels and seal vessel stores where high pest-risk food items are contained on board to prevent crew members from taking these food items ashore while on leave; to monitor shipments of commodities while transiting California to foreign destinations; issue compliance agreements for aircraft owners/operators, catering facilities, vessel dry docks, and vessel/aircraft garbage handling facilities and monitor them as needed; and supervise quarantine treatments of commodities that are infested with exotic agricultural pests. All of this work is done in cooperation with U.S. Customs, USDA, U.S. Food and Drug Administration, CDFA Animal Health Branch, county agricultural departments, agricultural officials in other states, plus representatives from the trucking, airline and shipping industries.

Vessel Inspections. In 2004, a total of 595 shipments were inspected on 23 vessels arriving at major California seaports. A total of 35 pests were intercepted and 8 shipments were rejected. A total of three rejected shipments were treated under CDFA supervision and released. All shipments originated from foreign countries or Hawaii and were rejected for quarantine violations or the presence of prohibited pests.

Exclusion Activities/Inspections

Port Area	Vessels	Shipments	Rejections	Total Pest Interceptions	Treatments Supervised
Northern California	20	110	3	32	1
Southern California	3	485	5	3	2
Totals	23	595	8	35	3

Notable Inspections. Interior Pest Exclusion staff coordinated with the county agricultural offices to inspect other businesses such as high-risk ethnic markets, pet stores, etc. Types of pests intercepted through these activities in 2004 include: False Powder Post Beetles (Coleoptera: Bostrichidae), *Sinoxylon sp.* and *Sinoxylon anale* on tile and wooden crates from India, Colorado Potato Beetles in shipment of coriander, onion and radish seeds from Washington State.

Interior Pest Exclusion staff worked with USDA/APHIS/PPQ officers in coordinating efforts to gain compliance in the "Florida Citrus to Japan and Taiwan Program". This involved inspecting six different transloading locations and issuing compliance agreements for the 2004 citrus season. A total of 4,500,000 lbs. of Florida grapefruit was shipped from the Port of Long Beach to Japan and Taiwan in the program.

District Inspection Activities

Activities	Northern California	Southern California	Totals
Warning/Hold Notice Issued by Port Inspector	112	535	647
Storage Facility	10	1	11
Export Transit Shipments	125	498	623
Port Operations Coordination Contacts	310	270	580
Vessel Stores Sealed	0	1	1
Steamship Line Manifests Read	52	156	208
Biotechnology/Soil Lab Inspection	8	7	15
Ethnic Market Inspection (Cooperation with Counties)	35	70	105
Grain/Feed Mill Inspection	3	0	3
Hawaiian Vehicle Inspection	350	0	350
Dunnage Inspection	10	0	10

COUNTY HIGH RISK PROGRAM

Background

The County High-Risk Pest Exclusion Program (CHRPEP) was established in December 1998 by urgency legislation, Senate Bill 2062, Rogers (Chapter 635, statutes of 1996), known as “the Roger’s Bill,” to augment county terminal point inspections. The CHRPEP is a cooperative program that provides funds to county agricultural commissioners to conduct high-risk pest exclusion activities under state oversight by the CDFA.

The study found that conducting a statewide County High Risk Pest Exclusion Program at optimal levels would cost approximately \$14 million a year. In 1998, Section 2282.5, Food and Agricultural Code of California, and a state budget augmentation provided the county agricultural commissioners (CACs) with \$5 million to conduct an optimal level program for the latter portion (December-June) of fiscal year 1998/99. The CDFA allocated funding by way of a negotiated work plan process with the CACs.

In 1999, Section 2282.5 was amended, providing for continuation of the program in fiscal year 1999/00 by extending the June 29, 1999 sunset date to June 30, 2000. In fiscal year 2002/03, the high-risk program’s funding had been reduced to \$5.5 million with Scientific Evaluation Trapping paid out of the Department’s funds. For fiscal year 2004/05, the county contracts for high-risk was \$977,000.

High-Risk Inspections

The primary responsibility of the County High Risk Pest Exclusion Program (CHRPE) is to provide guidance and funding to county agricultural commissioners to conduct high-risk pest exclusion activities at first point of entry terminals within California. The CHRPE is a vital component in the State’s overall pest prevention efforts, and is a crucial part of the CDFA’s mission to protect agriculture and the environment from the threat of newly introduced exotic pests. Terminal points continue to include airports, nurseries, and U.S. postal and private parcel facilities, as well as high-risk destination points, including specialty markets, swap meets, and flea markets. Other high-risk entry points have also included locations where household goods from gypsy moth infested areas were delivered, and locations where material in post-entry quarantine is held. California’s rapidly increasing population, coupled with expanding worldwide travel and trade opportunities, has increased the number of locations of infested areas, which continually test the State’s pest prevention strategies and limited resources. A great number of high-risk exotic and invasive plant pests have become established in California because of human activities such as trade and commerce, tourism and travel, as well as illegal smuggling.

A large part of the administration of the program involves the contracting of services and goods logistically important to the success of this mission. The State budget allocation remains at \$977,000 from general funds for high-risk activities. Forty-eight counties are participating in the high-risk exclusion activities, with contracts totaling \$977,000.

As part of this important program, county agricultural inspectors/biologists assist with the retrieval of any infested lots, i.e., nursery stock that contains high-risk pests. Seizure of illegal fruit that may have already entered the State is also a vital part of this program.

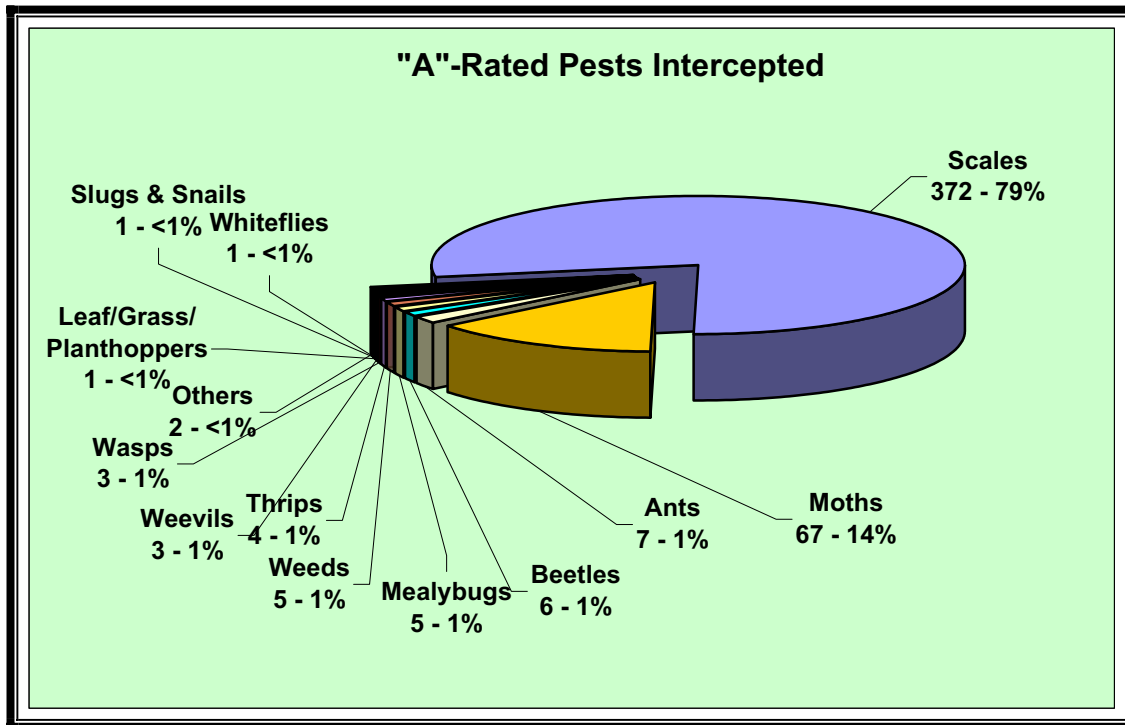


Figure 6. Frequently intercepted "A"-rated pests (number, percentage of total) in 2004

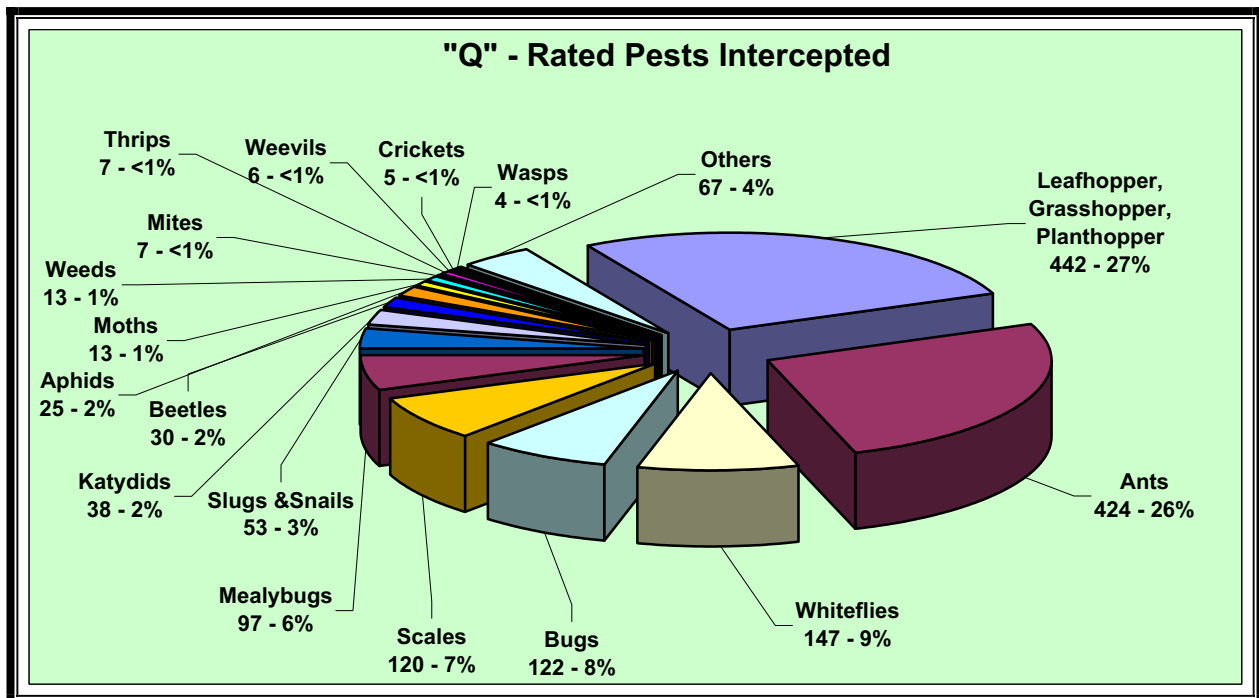


Figure 7. Frequently intercepted "Q"-rated pests (number, percentage of total) in 2004

Counties with Two or More “A”- and “Q”-Rated Pest Finds in 2004

COUNTY	PEST FINDS	COUNTY	PEST FINDS	COUNTY	PEST FINDS
San Mateo	781	Shasta	20	Placer	5
Los Angeles	641	Riverside	18	Merced	4
Contra Costa	124	Mendocino	10	Monterey	3
San Joaquin	118	Sonoma	9	Ventura	2
Orange	110	San Bernardino	8	Fresno	2
Alameda	61	Marin	7	Stanislaus	2
San Diego	50	Santa Barbara	6	Butte	2
San Luis Obispo	28	Santa Clara	6		
Sacramento	25	San Francisco	5		

Note: PDR data source.

A total of 3,684 shipments were rejected from January to December 2004 due to the presence of “A”- and “Q”-rated pests, or due to lack of origin or treatment certification. Figures 6 and 7 detail the pests most commonly intercepted. There were 354 seizures of foreign-origin plant pest and quarantine material that were brought into California illegally.

Foreign Origin Materials Rejected in 2004

MATERIAL	ORIGIN	SHIPMENTS REJECTED
Dracaena Plants	Costa Rica, Guatemala	43
Bulbs	Canada, Netherlands	62
Azalea	Canada	14
Grass Seeds	Canada	14
African Violet	Canada	14
Forsythia	Canada	14
Edelweiss	Canada	14
Plumeria	Canada	14
Chrysanthemum Mum	Canada	14
Pine Cones	India	12
Pepper	Thailand, Lao, Mexico	12
Cuttings	Guatemala, Israel, Ecuador, Brazil, Colombia, Costa Rica	11
Meat Product	Hong Kong, Lao, Thailand	11
Leaves	Colombia, Brazil, Israel, Mexico, India	10
Potpourri	India	9
Tindora	Dominican Republic	9
Lime	Thailand, Mexico	9
Ya Pear	China	7
Ti Leaves	Brazil, Costa Rica, Ecuador, Colombia	7
Palm	Ecuador, Mexico, Costa Rica	7
Fruits	Mexico, Chile, Ecuador, South Africa, Israel	5
Schefflera Plants	Costa Rica	5
Millet	India, Korea	4
Thyme	Israel	3
Bird of Paradise	Colombia	3
Mixed Seeds	Thailand	2
Rice	Thailand	2
Wheat	Mexico, India	2
Hydrilla	Singapore	1
Misc. Plants	Lao, Thailand, Costa Rica, Australia, Dominican Republic	6
Misc.	Thailand, China, Lao, Brazil, Mexico, Greece, Netherlands, Denmark	14

Note: NOR data source.

High Risk Pest Exclusion Activities in 2004 Statewide

TERMINAL	REJECTIONS ISSUED	HOURS	SHIPMENTS INSPECTED	PREMISE VISITS
Post Office	333	4,005.00	31,784	4,822
United Parcel	563	10,372.65	54,224	8,932
Federal Express	1291	19,180.51	166,778	11,413
Gypsy Moth	9	2,772.40	1,004	1,092
Air Freight	917	12,437.80	15,396	15,237
Air Freight - Fwd	77	2,818.80	3,524	1,747
Truck (008) plant	258	19,758.80	23,425	10,624
Truck – (008) other	113	3,678.12	42,518	2,568
Specialty Markets	32	2,006.75	1,722	3,609
Swap Meets	28	116.75	1,264	67
Post Entry	0	146.00	165	44
Other High Risk	63	7,332.54	4,866	9,474
Totals	3684	84,626.12	346,670	69,629

NOTE: Report 4A data source. Not all report 4As have been submitted for 2004.

“A”- and “Q”-Rated Pests Intercepted for 2004

DESCRIPTION	TOTA	TRUCK	AIRCRAFT	UPS	FEDEX	USPS	NURSERY SHIPMENT INCOMING	OTHER
Alameda	63		6		45		10	2
Butte	3	2		1				
Contra Costa	126	2		2	118		4	
Fresno	4	1		2	1			
Humboldt	3			2		1		
Los Angeles	643	16	601		18		6	2
Marin	7				7			
Mendocino	11			1	10			
Merced	4	3			1			
Monterey	3	2					1	
Orange	114	30	21	4	59			
Placer	7	1		1	4			1
Riverside	18	5	2				11	
Sacramento	26	2	3		18		2	1
San Bernardino	8		4		3		1	
San Diego	50	1	1		5		43	
San Francisco	5		4				1	
San Joaquin	118		2		5		111	
San Luis Obispo	33	3	20	4	5			1
San Mateo	783	34	733		14			2
Santa Barbara	6		1		5			
Santa Clara	26		2		4			20
Shasta	22	1			19	2		
Sonoma	9	1	1		7			
Stanislaus	2				2			
Ventura	9	2			1			1
Totals	2,097	106	1,401	17	350	3	190	30

Note: PDR data source.

Other Terminal Point Inspections. The county agricultural commissioner conducts routine terminal inspections of mail carriers, air freight, sea freight, etc. with oversight by the Interior Pest Exclusion. Over 400,000 shipments were inspected in 2004. The following table shows the results of these terminal inspections:

Terminal Point Inspections in 2004

Terminal	Shipments	Notice of Rejection	Pest Rejections
Post Office	60,962	398	19
UPS	60,684	620	28
Federal Express	195,860	1,240	259
Express Carrier	2,805	7	2
Air Freight	17,474	1,214	1,488
Sea Freight	773	17	20
Railroad	141	2	0
Gypsy Moth	1,288	8	14
Truck	54,121	317	198
Other	9,716	150	47
Totals	403,824	3,973	2,075

NOTE: Report 4 data source. Not all report 4s have been submitted for 2004.

Facility and property inspections. The county agricultural commissioner conducts routine facility and property inspections with oversight by the Interior Pest Exclusion staff. These inspections include feed grain/screening facilities, research facilities, and destination properties of post-entry shipments. Over 3,600 facilities and properties were inspected in 2004. The following table shows the distribution of these inspections:

Facility and Property Inspections in 2004

Facility/Property	Number of Inspections
Feed Grain/Screening	14
Post-Entry Property	74
Testing/Research	30
High Risk Markets	3,300
Q.C.C. 211 Facility	183
Totals	3,601

Smuggling interdiction. Interior Pest Exclusion biologists and Agricultural Commodity Investigation Team (ACIT) investigators work cooperatively with other programs, agencies and industry groups that have vested interests in agricultural smuggling interdiction. The programs include CDFA border stations, the USDA's SITC and county agricultural commissioners. Through Industry tips, routine market inspections and blitzes, referrals from other programs, agencies, and states, Interior Pest Exclusion Biologists and ACIT investigators locate and seize agricultural commodities that have entered California illegally. When the origin of suspect agricultural commodities cannot be verified with receipts or other proof of ownership documentation, they are seized and destroyed.

In 2004, ACIT investigators conducted 24 investigations resulting in three criminal convictions and three pending criminal actions. These investigations involved a variety of suspect commodities, such as, sweet potatoes, carambola, grapes, Gaya melons, okra, burdock root, sapote, mamey, citrus plants, citrus budwood, and pygmy date palms. Adjudicated prosecutions this year ranged in fine amounts from \$6,650.00 to \$184,000.00, which included investigative costs. All recovered investigative costs are allocated to the Pest Exclusion Branch.

An important component of smuggling interdiction is public outreach and education. This includes identifying and inspecting local commercial and non-commercial sources of exotic fruits and providing those sources to industry. Many homeowners or non-commercial backyard growers, who produce too much fruit for their personal consumption, sell the excess at neighborhood markets. There are no agricultural regulations prohibiting this activity if it does not occur within a regulated exotic fruit fly quarantine area and is accompanied by the proper paperwork. When conducting market inspections, ACIT investigators and Pest Exclusion biologists gather information for follow-up inspections. They inspect homeowners' residences, non-commercial growers, and commercial growing grounds to verify and document location, production, and harvest season. This information is later entered into a database for future access, and is useful to other programs or cooperating agencies at later times.

Working closely with USDA-SITC in California enables ACIT investigators to network with other states. This networking provides ACIT investigators with information on other states' locally grown sources of exotic produce and fosters information sharing that can be useful in interdicting smuggled agricultural commodities throughout California. In turn, since so much of California's produce makes its way to other states, this information sharing becomes invaluable for verifying California origin exotic produce for agricultural cooperators nationwide. The cooperative effort and information sharing between agricultural programs and agencies, inspection activities, and the subsequent investigations and prosecutions of agricultural violators helps to ensure that commodities enter this state legally, and are free from exotic insect pests and diseases. This in turn protects California's agricultural industry.



Figure 8. Agricultural Commodity Investigation Team locates and seizes commodities that illegally entered California

Facilitation of Trade

Interior Pest Exclusion works cooperatively with the USDA, agricultural officials from other states, and the county agricultural departments to facilitate both domestic and foreign trade of agricultural products. This is accomplished by:

- Collaboration with other states
- Administrating the Federal Phytosanitary Program

Collaboration with Other States

Interior Pest Exclusion works with agricultural officials in other states to coordinate certification and inspection procedures that will meet California entry requirements.

Origin Inspection Program. The Origin Inspection Program (OIP) is a cooperative program between the CDFA and regulatory officials in other states to inspect qualifying agricultural commodities and certify that all of California's entry requirements are met. Ongoing negotiations with other regulatory agencies is required, as shippers request new commodities to be included in the program. This program is an integral part of California's pest prevention system because it mitigates the pest risk at origin. Presently, the commodities covered under the OIP include fruits and vegetables, cut flowers and greens, canola pellets, bulbs, seed, and nursery stock.

There are 133 companies participating in the OIP. In 2004, all Sudden Oak Death host material was removed from the list of approved commodities from OIP shippers in Oregon and Washington due to the unknown risks associated with this material. However, after review of the SOD inspection and testing program conducted in Oregon, certain SOD hosts were once again allowed to enter under the OIP from Oregon.

Origin Inspection Program

State/Country	OIP Participants
Arizona	1
Canada	2
Colorado	1
Florida	2
Hawaii	31
Mississippi	1
Nevada	1
New Mexico	1
Ohio	1
Oregon	58
Utah	1
Washington	34
Totals	133

Master Permits and Compliance Agreements. Interior Pest Exclusion worked with agricultural officials in Texas, Ohio, Mississippi, and Arizona to develop compliance agreements that allowed shippers in those states to ship commodities to California. Compliance agreements were approved for the shipment of nursery stock, bulk produce, and fresh fruit gift packages.

Administering the Federal Phytosanitary Program

Interior Pest Exclusion works cooperatively with the USDA, regulatory officials in other states and countries, private industry, and the county agricultural commissioners, to provide quarantine consultations to facilitate trade to both foreign and domestic markets.

Phytosanitary Export Certification Administration. Phytosanitary certification is a service provided to industry to meet the plant quarantine requirements of foreign countries, other states, or California’s own interior quarantines. This service helps facilitate domestic and foreign trade in agricultural commodities. The USDA is charged with nationwide implementation of the international phytosanitary certification program. Interior Pest Exclusion administers both this federal program in California for the USDA and the domestic phytosanitary certification program. Interior Pest Exclusion provides training to county agricultural commissioner’s staff to issue phytosanitary certificates.

Phytosanitary inspections may include post-harvest inspections of agricultural commodities at packing sheds or terminal inspection points; and/or growing season inspections of seed fields, nursery stock, and fruit and vegetable stock.

The following chart lists the number of inspections and certificates issued for various areas of responsibility:

Inspections and Certificates Issued in 2004

County Certification Activities		
Type of Cert	Inspections	Certificates Issued
Federal Phytos	113,799	124,517
State Phytosanitary Certification	6,047	7,660
Compliance Certificates	20,224	40,561
Quick Decline Permits	2,763	2,896
Compliance Agreements	1,913	178
Others	10,081	3,849
Totals	154,827	179,661

NOTE: Report 4 data source. Not all report 4s have been submitted for 2004.

Phytosanitary Issues Management. Phytosanitary issues management (PIM) encompasses a range of activities that support export market access and maintenance of open export markets. The main PIM activities include: assisting the USDA in development of and implementing commodity export work plans; providing requested information to foreign plant protection officials regarding pests of their concern; and providing technical support to the USDA during in-state meetings with foreign plant protection officials. The chart below summarizes Interior Pest Exclusion PIM activities for 2004.

Phytosanitary Issues Management

Commodity	Country/State	Action
Citrus	Australia	Developed Integrated Pest Management practices for control of bean thrips in the field
Oranges	Korea	Negotiated work plan to re-open market Developed <i>Septoria citri</i> testing procedures for export clearance
Apples	Taiwan	Developed Work Plan and Export Protocol
Nursery Stock	Canada	Collaborated with Canadian Food Inspection Agency (CIFA) to reduce restrictions on low risk "Sudden Oak Death" (SOD) materials
Cut Roses	Canada	Collaborated with CIFA to repel prohibition on cut roses because of SOD
Citrus	China	Compiled data on Mediterranean fruit fly trapping for petition to terminate scientific trapping requirements
Grape	New Zealand	Met with NZ Ag Officials; developed work plan
Hosts of Pink Hibiscus Mealybug	Various	Provided information on pest status, distribution, mitigation
Citrus	Arizona	Negotiated new regulations for citrus nursery stock surface pests
Nursery Stock	South Eastern States	Collaborated to establish uniform regulations for California nursery stock exports and to eliminate additional state regulations

Phytosanitary Field Inspection of Seed Program Highlights. The Phytosanitary Field Inspection of Seed Program (PFISP) inspects crops during the growing season for diseases of concern to importing countries. The seed from the inspected crops may be certified for export depending on the results of the inspection and the importing countries' phytosanitary concerns. Growers submitted 3,129 applications for crop inspections to the CDFA in 2004. The following tables indicate the top three crops entered into the program, and the top three counties where crops entered into the program were grown.

Top Three Crops in the PFISP	
Sunflower	466
Watermelon	383
Cucumber	339

Top Three Counties of Origin	
Yolo	595 applications
Colusa	555 applications
Monterey	349 applications

Commodity Treatment Manual. Interior Pest Exclusion has revised the 1991 edition of the CDFA Commodity Treatment Manual (CTM) for publication on the intranet. The CTM document is intended to address those pest quarantine concerns that are unique to California. Accordingly, the CTM is a companion document to the federal treatment manual. The current revision of the CTM includes a major effort to create an intranet document as well as adding new treatment schedules. The intranet document is constructed to facilitate rapid information retrieval by presenting the user with a topical index from which content is accessed. The new e-version includes Internet links to the California Department of Pesticide Registration for verification of current pesticide registrations. In addition, web tools are provided for referencing product labels. The final draft is currently being shared with the CDFA legal department for formal review prior to public release via the internet.

Other Pesticide Issues. In 2004, at the request of the citrus nursery industry, Pest Exclusion and Pest Detection/Emergency Projects supported the retention of a Lorsban Special Local Need Registration for use in California for treatment of red scale on citrus nursery stock destined for Arizona. In addition, after months of consultation with the U.S. Environmental Protection Agency (USEPA), CDFA gained approval to submit a request for two minor agricultural use exemption waivers for spinosad GF-120 conventional and spinosad GF-120 "NF" organic fruit fly bait sprays for use during quarantine situations.

EXTERIOR PEST EXCLUSION

The Exterior Program's mission is to lessen the risk of exotic pest introductions, via overland highways at California's interstate land borders. California established the border inspection system in 1921 at Truckee to monitor vehicles entering the State for prohibited or infested commodities, but the first permanent station was established at Long Valley in July 1922. Presently, the California Department of Food and Agriculture (CDFA) operates 16 inspection stations located on major highways throughout the State. To ensure there is no likelihood that any given vehicle is carrying commodities, which are potentially harboring pests that pose a serious threat to California agriculture, the goal of the Exterior Pest Exclusion personnel is to perform the following functions:

- Enforce the California Food and Agricultural Code, federal and state quarantines, and county enforcement policies;
- Inspect commercial shipments carried by trucks to ensure quarantine compliance, and intercept exotic pests transported in these shipments;
- Provide quarantine consultations to the agricultural industry and the public; and
- Collect, analyze, and disseminate data pertaining to commodity movement, pest interceptions, and traffic flow.

Additionally, the Program has cooperative working relationships with several other branches of the Department. These include Fruit and Vegetable Quality Control Standardization; Animal Health; Egg Quality Control; Feed, Fertilizer and Livestock Drugs; and Agricultural Statistics. The border station inspectors also work closely with many other federal and state agencies (e.g., United States Department of Agriculture, California Public Utilities Commission, Federal Immigration and Naturalization Service, California Parks and Recreation, California Fish and Game, California Department of Water Resources,



Vidal Inspection Station

California Department of Transportation, Department of Pesticide Regulation, California Board of Equalization, California Highway Patrol, California Department of Conservation, and the Bureau of Land Management) in the enforcement of laws pertinent to them.

At the local level, border station personnel assist the county agricultural commissioners, county sheriff/city police, and fire departments with various issues or provide public assistance with emergencies that arise at or in the vicinity of the stations. Border personnel provide information regarding quarantine regulatory activity to the Arizona, Nevada, and Oregon departments of agriculture and the Oregon-Washington-Idaho Potato Commission.

MISSION STATEMENT

Protect California from the introduction of invasive pests via overland highways.

Vision: We are California's first line of defense in its pest prevention system. California's agricultural inspection stations enforce quarantine laws and regulations by using the best available technology and biologically sound methods.

Values:

- **Consistency:** Enforcement of laws and regulations is standardized throughout the program
- **Communication:** Open, constructive exchange of ideas and information
- **Decision:** Decision-making based on the best available science, technology, and common sense
- **Team Work:** Accomplishing program goals through the cooperative efforts of each of our employees
- **Integrity/Dependability:** Our employees are committed to excellence in job performance
- **Credibility:** We have a responsive, accountable, and trusted program
- **Employee Development:** Provide an environment that develops employee skills, potential, and capabilities

Goals: To accomplish our mission by:

- Inspecting all vehicles based on pest risk profiling
- Educating and soliciting the cooperation of the affected industry and traveling public
- Maintaining an informed and well-trained workforce
- Continuously striving to expand and improve our service to the citizens of California

ACCOMPLISHMENTS

Commercial Shipment Inspection

Due to the volume and potential for wide dispersal of commercial shipments of commodities, truck traffic presents the greatest risk of introducing exotic pests into California. In 2004, 6,058,888 commercial trucks entered California through the border inspection stations. Of these, approximately 10% were opened for inspection and the commodities they were transporting were physically inspected. The remainder was released after verifying the contents by inspection of paperwork accompanying the load.

Commercial Citrus Sampling: A total of 7,394 commercial shipments of citrus entered California from the regulated areas of the Bahamas, Mexico, Spain, Florida, and Texas. From these shipments, border station personnel sampled 5,793 containers of fruit. There were 239 shipments rejected due to lack of proper certification or pest finds.

Commercial Mango Sampling: To ensure mangoes are free from exotic fruit flies and other pests, a total of 15,538 containers from 5,545 commercial shipments of mangoes were sampled. Mango shipments originated from Haiti,

Mexico, and other Central and South American countries. During sampling, only dead fruit fly larvae was discovered, which indicates the hot water treatments were properly applied. However, 85 shipments were rejected due to the presence of significant surface pests finds (i.e., scale insects). The remainder of the shipments were released after inspection.



Sampling Citrus at Blythe

Cherry Fruit Fly Origin Sampling and Certification Program: Under special permit, shippers are allowed to ship unfumigated cherries to California. Fruit entering under this program is certified as being pest free, based on field treatments and fruit sampling both at origin and upon arrival at the California border; thus eliminating the need for fumigation.

There were 96 shippers who participated in the 2004 permit program. This number included 63 from Washington, 13 from Oregon, 11 from Idaho, seven from Utah, and two from British Columbia, Canada.

This season, a total of 2,888 commercial cherry shipments entered the State. Of these, 1,588 shipments were destined to California markets under special permit and 1,300 fumigated loads were transiting the State to foreign destinations. Border station personnel sampled all shipments destined to California markets. There were 88 shipments that failed to meet the special permit requirements. Those shipments were either shipped out-of-state or inspected and released after the requirements were met.



Gypsy Moth Larva

Gypsy Moth Regulatory Activities: Border station personnel issued 63 citations for lack of proper certification to drivers carrying high-risk gypsy moth shipments. A total of 2,317 shipments of used household goods were quarantined and sent to destination for final inspection.

There were 309 inspections performed on recreational vehicles for various gypsy moth life stages. All of these private vehicles originated from gypsy moth quarantine areas. Of these, two were found to be infested with gypsy moth and were cleaned at the stations.

Other Quarantine Activities: The table below details miscellaneous plant quarantine work performed at the border stations during 2004:

Summary of Commercial Shipments of Regulated Commodities – 2004			
	Inspected and Released	Sent to Destination Under Hold Notice	Rejected Due to Lack of Being Found
Feed Grain	4,151	24	0
Hay	40,761	111	0
Bee Colonies and Related Equipment	71	2,317	29
Misc. Fruits, Vegetables, Nursery Stock and Seed	312,114	28,305	1,864
Total	357,097	30,757	1,893

Significant Pest Finds

Border station personnel intercepted actionable (“A”- or “Q”-rated) pests on 489 occasions during 2004. This represents a 32% increase over the number of significant pests intercepted in 2003. These interceptions are detailed in the following tables:

Insects				
Genus	Species	Common Name	Rating	Times Found
<i>Acanthocephala</i>	<i>declivis</i>	Leaf footed bug	Q	1
<i>Acutaspis</i>	<i>scutiformis</i>	An armored scale	Q	2
<i>Acutaspis</i>	<i>scutiformis</i>	An armored scale	Q	1
<i>Aleurocerus</i>	<i>sp.</i>	Palm whitefly	Q	1
<i>Aleurotulus</i>	<i>sp.</i>	Anthurium whitefly	Q	1
<i>Alydus</i>	<i>sp.</i>	a lygaeid bug	Q	1
<i>Anastrepha</i>	<i>ludens</i>	Mexican fruit fly	A	4
<i>Anastrepha</i>	<i>sp.</i>	An exotic fruit fly	A	7
<i>Anomala</i>	<i>luteipennis</i>	A scarab beetle	A	1
<i>Anomala</i>	<i>sp.</i>	A scarab beetle	Q	3
<i>Aulacaspis</i>	<i>tubercularis</i>	White mango scale	Q	59
<i>Camponotus</i>	<i>sp.</i>	A carpenter ant	Q	24
<i>Ceroplastes</i>	<i>sp.</i>	A wax scale	Q	1
<i>Cerotoma</i>	<i>trifurcata</i>	Bean leaf beetle	A	1
<i>Chalcophora</i>	<i>virginiensis</i>	A buprestid beetle	Q	1
<i>Conotrachelus</i>	<i>sp.</i>	A weevil	Q	1
<i>Corythucha</i>	<i>sp.</i>	A lace bug	Q	1
<i>Cydia</i>	<i>caryana</i>	Hickory shuckworm	A	3
<i>Cydia</i>	<i>sp.</i>	An olethreutine moth	Q	1
<i>Cylas</i>	<i>formicarius</i>	Sweet potato weevil	A	1
<i>Dasineura</i>	<i>mali</i>	Apple leaf gall midge	Q	4
<i>Dialeurodes</i>	<i>kirkaldyi</i>	Kirkaldy's whitefly	Q	1
<i>Diplotaxis</i>	<i>sp.</i>	A scarab beetle	Q	1
<i>Euxoa</i>	<i>sp.</i>	A cutworm	Q	1
<i>Genaparlatoria</i>	<i>pseudaspidiotus</i>	Vanda orchid scale	A	100
<i>Hypoconer</i>	<i>sp.</i>	An ant	Q	1
<i>Ips</i>	<i>sp.</i>	A bark beetle	Q	1
<i>Lepyronia</i>	<i>sp.</i>	A spittlebug	Q	1
<i>Lymantria</i>	<i>dispar</i>	Gypsy moth	A	2
<i>Maconellicoccus</i>	<i>hirsutus</i>	A mealybug	A	2
<i>Malacosoma</i>	<i>Americanum</i>	Eastern tent caterpillar	A	1
<i>Marmara</i>	<i>sp.</i>	A gracilariid moth	Q	1
<i>Melanaethus</i>	<i>sp.</i>	A burrower bug	Q	1
<i>Monoctonus</i>	<i>clamator</i>	A beetle	Q	1
<i>Monoctonus</i>	<i>sp.</i>	A pine sawyer	Q	1
<i>Monomorium</i>	<i>floricola</i>	An ant	Q	2
<i>Myodocha</i>	<i>sp.</i>	A lygaeid bug	Q	1
<i>Ochetomyrmex</i>	<i>sp.</i>	An ant	Q	1
<i>Odontomachus</i>	<i>sp.</i>	An ant	Q	1
<i>Ostrinia</i>	<i>nubilalis</i>	European corn borer	A	1
<i>Ozophora</i>	<i>sp.</i>	A lygaeid bug	Q	1
<i>Parlatoria</i>	<i>citri</i>	An armored scale	Q	1
<i>Pheidole</i>	<i>megacephala</i>	Bigheaded ant	Q	9
<i>Pheidole</i>	<i>sp.</i>	An ant	Q	12

Genus	Species	Common Name	Rating	Times Found
<i>Popillia</i>	<i>japonica</i>	Japanese beetle	A	1
<i>Prosapia</i>	<i>bicincta</i>	Twolined spittlebug	Q	1
<i>Pseudaonidia</i>	<i>trilobitiformis</i>	Trilobe scale	Q	2
<i>Pseudaulacaspis</i>	<i>cockerelli</i>	Magnolia white scale	A	1
<i>Pseudococcus</i>	<i>obscurus</i>	A mealybug	Q	1
<i>Pseudococcus</i>	<i>odermatti</i>	A mealybug	Q	1
<i>Pseudococcus</i>	<i>sp.</i>	A mealybug	Q	2
<i>Rhagoletis</i>	<i>indifferens</i>	Western cherry fruit fly	A	2
<i>Rhagoletis</i>	<i>sp.</i>	An exotic fruit fly	Q	1
<i>Selenaspidus</i>	<i>articulatus</i>	Rufous scale	A	1
<i>Solenopsis</i>	<i>geminata</i>	A fire ant	A	1
<i>Solenopsis</i>	<i>invicta</i>	Red imported fire ant	A	113
<i>Solenopsis</i>	<i>sp.</i>	A fire ant	Q	18
<i>Spodoptera</i>	<i>sp.</i>	An armyworm	Q	1
<i>Technomyrmex</i>	<i>albipes</i>	White-footed ant	Q	7
<i>Tetraeuaresta</i>	<i>sp.</i>	An exotic fruit fly	Q	1
<i>Unaspis</i>	<i>citri</i>	Citrus snow scale	A	6
<i>Wasmannia</i>	<i>sp.</i>	An ant	Q	1
Unknown		An ant	Q	7
Unknown		A tortricid moth	Q	6
Unknown		Unidentified insect eggs	Q	4
Unknown		A longhorned beetle	Q	3
Unknown		A bug	Q	3
Unknown		A weevil	Q	3
Unknown		A mole cricket	Q	1
Unknown		A woollybear moth	Q	1
Unknown		A pyralid moth	Q	1
Unknown		A fly	Q	1
Total				467

Weeds				
Genus	Species	Common Name	Rating	Times Found
<i>Carduus</i>	<i>nutans</i>	Musk thistle	A	1
<i>Centaurea</i>	<i>maculosa</i>	Spotted knapweed	A	3
<i>Centaurea</i>	<i>Diffusa</i>	Diffuse knapweed	A	3
<i>Onopordum</i>	<i>Acanthium</i>	Scotch thistle	A	3
<i>Sesbania</i>	<i>punicea</i>	Rattlebox	Q	1
Total				11

Mollusks				
Genus	Species	Common Name	Rating	Times Found
<i>Cepaea</i>	<i>sp.</i>	Snail	Q	1
<i>Dreissena</i>	<i>polymorpha</i>	Zebra mussel	Q	3
Total				4

Animals				
Genus	Species	Common Name	Rating	Times Found
Mustela	putorius	Ferret	A	4
Meriones	unguiculatus	Gerbil	A	2
Myiopsitta	minachus	Quaker Parrot	A	1
<i>Total</i>				7

Intra and Inter Agency Cooperative Activities

Game Importation Declarations – In cooperation with the California Department of Fish and Game, exclusion inspectors collected 276 game declarations from hunters returning to California. These declarations assist Fish and Game in identifying and prosecuting hunting and fishing regulation violations.

Livestock Tracking – During 2004, 36,907 shipments of livestock were recorded as entering California. This information was forwarded to the Animal Health Branch for ownership and disease tracking.

Market Egg Shipments – A total of 9,695 shipments of market eggs were recorded as they entered through the border stations from other states. Information regarding these shipments was shared with the Egg Quality Control Program to ensure that all the shipments met quality standards and appropriate mill fees were paid.

Digital Imaging Technology

Pest Identification – The digital pest identification system uses a digital microscope and the Internet to allow for laboratory personnel to readily identify insect specimens. Because of the past success of these systems already installed at the Needles and Blythe stations, six additional systems were installed; one each at the Vidal, Winterhaven, Yermo, Truckee, Hornbrook and Dorris inspection stations. In 2004, 520 pest specimens were identified using these systems. This facilitated prompt quarantine action, with minimal delays, on trucks hauling insect infested commodities.

Pest Exclusion Data Collection and Information Management

Pest and Damage Record System. The Pest and Damage Record (PDR) system is used to submit samples for identification to our Plant Pest Diagnostics Center, report results back to the submitter, and allow users to search and download records from the system. This system is based on a single, centralized database with all data accessible via the Internet. Lab specific submittal forms are printed over the Internet for submission with the samples. The Plant Pest Diagnostics Center uses a non-web based application, the Specimen Identification System, to input the determinations.

This interface may be used by anyone submitting samples to our Plant Pest Diagnostics Center. Oregon began submitting their Origin Inspection Program samples through this interface in 2003. In addition, several Cooperative Extension offices have begun to use this interface. In 2004, there were 510 different users that submitted samples to the lab. The table below gives a breakdown by organization.

Organizations Submitting PDRs to the Plant Pest Diagnostics Center through this System – Collected During Calendar Year 2004

Organization	Number of PDRs Submitted
Agricultural Commissioners Office	13,256
Agriculture Related Industry	340
California Department of Food and Agriculture	6,523
Educational	483
Other State Ag Departments	1201
Total	21,803

Note: PDR Data source

Several new features were added to the system this year. 1) A subscription module allows users, via the Internet, to sign up to receive an automated notification when any PDR determination is entered that meets criteria of interest to them. 2) Integration with other database systems including the Notice of Rejections, Warning/Hold Notices (008), and Gypsy Moth Warning/Hold Notices (008a). This helps prevent duplicate entry of information that has already been filled in through another system. 3) The ability to input determinations through the Internet removing the necessity for all determinations to be input either in the Plant Pest Diagnostics Center, Meadowview facility or at headquarters. A handheld-based data entry system is currently under development using PocketPC 2003 based PDAs. This system is due to be completed by the end of January 2005.

Phytosanitary Certificate Issuance and Tracking System (PCIT). During the past four years, the United States Department of Agriculture (USDA) has been working to analyze and develop a computer-based system for the issuance and tracking of federal and state phytosanitary certificates. The original Steering Committee, (comprised of USDA, area Plant Board representatives, and USDA members of the PCIT Working Group), has been replaced by a single advisory group, the PCIT Advisory Group (PAC). The CDFA represents the Western Plant Board on the advisory committee for this project. The Phytosanitary Certificate Issuance and Tracking system is still in the developmental stages at USDA with functional testing to occur in 2005. Letters were sent to USDA by both CDFA and the county agricultural commissioners this year to express concerns regarding the direction of this project.

Pest Exclusion Information Management System. The Pest Exclusion Information Management (PEIM) system is used by county and state offices for issuing notices of rejection for shipments entering the state without the proper certification or containing pests of concern. The Pest Exclusion Exterior Program (border inspection stations) also use this system to issue Warning/Hold Notices (008) and Gypsy Moth Warning/Hold Notices (008a). This system allows the field offices to utilize computer networks for input into a single database allowing multiple officers to input records simultaneously and a single point for data transfer to Sacramento. The Notice of Rejection (NOR) interface functions similar to the PDR interface, reducing the time required for training. This system is now in use at all border stations and 29 counties.

The latest version of this application utilizes an ftp (file transfer protocol) site to transfer records to Sacramento rather than e-mail used by the older versions. This system was integrated with the PDR system this year. If a pest is intercepted based on an inspection from a 008 or 008a, the information from these systems is automatically placed on the PDR preventing duplicate data entry and possible typing errors.

NURSERY, SEED, AND COTTON PROGRAM

NURSERY PROGRAM

Our mission is to prevent the introduction and spread of agricultural pests through nursery stock and to protect agriculture and the consumer against economic losses resulting from the sale of inferior, defective, or pest-infested nursery stock. In 2004, the value of nursery and floral products produced was \$3.4 billion, an increase of 3.9% from the previous year. The nursery program budget for 2004 was \$2,177,241 with 18.4 personnel years. Nursery program activities are funded entirely from revenue received in the form of license and acreage fees and registration and certification fees. Revenue received in 2004, totaling \$1,993,646, was used to offset the costs of these activities.

NURSERY REGULATORY AND INSPECTION ACTIVITIES

Financed primarily through license and acreage fees, nursery regulatory activities are conducted by the county agricultural commissioners and their staff and are an integral part of the state's agricultural pest prevention system. Nursery inspection and regulatory activities have prevented numerous pests from being disseminated throughout agricultural and suburban communities by preventing and/or eradicating pests at the nursery level. The quality of nursery stock has improved as a direct result of the regulation of nursery stock.



In 2004, there were 11,431 licensed sales locations with 801 production (growing grounds) locations. Since 2003, the budget for nursery inspection contracts has been set at \$500,000. In addition, any disencumbered funds from the previous year's nursery contracts is added to the next annual allocation. The amount added to the allocation for this year was \$35,000, resulting in a total of \$535,000 to be divided among the counties for the 2004/05 fiscal year contracts.

REGISTRATION AND CERTIFICATION SERVICES FOR PLANT MATERIALS

The California Food and Agricultural Code authorizes the Department to establish plant registration and certification (R&C) programs. These programs are implemented by the California Code of Regulations and enforced by the Secretary. The R&C services are provided solely by California Department of Food and Agriculture (CDFA) staff. In 2004, CDFA staff performed 549 inspections for R&C, including site approvals, growing season inspections, sampling for various purposes, and harvest inspections. In addition to making inspections to meet R&C requirements, all nursery stock must also meet the general nursery regulatory standards for pest cleanliness.

Registration and certification programs are voluntary programs developed at the request of various segments of the agricultural industry for the exclusion of specific plant pests that are not readily detected by ordinary inspections. These programs are the result of close working relationships between the University of California, the United States Department of Agriculture,

and the Department, with the added support of the agricultural industry. Specific viruses, viroids, fungi, soil-borne pathogens, and nematodes are the targeted pests of the nursery stock registration and certification programs.

The criteria for establishing these programs are: 1) there is an established need; 2) sufficient technical information is available; 3) a source of “clean” propagating stock has been established; and 4) methods have been developed to assure the continued pest cleanliness of the stock.

California presently has 8 “clean stock” (registration and certification) programs and a nematode certification program available for use by the various segments of the agricultural industry.

Table 1. Registration and Certification Programs

PROGRAM	PLANTING TYPE (BLOCKS)	RGET PEST	TESTING OR TREATMENT REQUIRED
Avocado Certification	Certified	<i>Phytophthora cinnamomi</i>	Hot water treatment of seed and soil fumigation
Avocado Registration	Registered tree and Increase block	Sun Blotch Viroid	Foundation tree index-testing for sun blotch viroid (UC)
Citrus Registration and Certification	Foundation, Increase and Certified	Citrange stunt, concave gum exocortis, psorosis, tatterleaf, seedling yellow tristeza, tristeza vein enation and yellow vein viruses.	Index testing (UC) + individual tree identification index-testing (CDFA)
Deciduous Fruit and Nut Tree Registration and Certification	Foundation, Mother, Registered, Certified, Increase, and seed	Various virus diseases, including prunus ringspot virus (PRSV) and prune dwarf virus (PDV)	Index-testing (UC) + index-testing for PRSV and PDV (CDFA) (Participant)
Grapevine Registration and Certification	Foundation, Increase and Certified	Fanleaf, fleck, asteriod mosaic, leafroll, yellow vein (Tomato ring-spot), corky bark virus	Nematode sampling (CDFA)
Seed Garlic Certification	Increase and Certified	Stem and bulb nematode (<i>Ditylenchus dipsaci</i>) and white rot	Nematode sampling (CDFA)
Pome Fruit Tree Registration and Certification	Foundation, Mother, Increase and Certified	Various virus diseases	Index-testing (USDA & UC) fumigation
Strawberry Nursery Stock Certification	Foundation, Increase, and Certified	Mottle, vein-banding, crinkle, mild yellow-edge, necrotic shock, pallidosis, tomato ring-spot, witches-broom, pseudo mild yellow-edge, latent "c," leafroll, and feather-leaf viruses.	Index-testing (UC & CDFa) Nematode sampling
Nematode Certification	Nursery plantings produced for on-farm planting	Various plant-parasitic nematodes	Nematode sampling, fumigation supervision, and commodity treatment (CAC & CDFa)

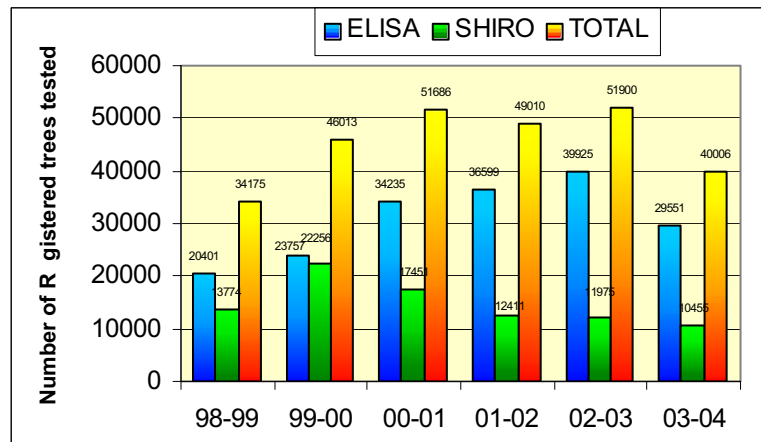
The primary tools developed for maintaining the pest cleanliness of the stock in these programs are: 1) biological indexing (use of indicator plants which exhibit symptoms of virus or virus-like diseases) and enzyme linked immunosorbent assay (ELISA); 2) laboratory techniques for the detection of nematodes; 3) eradication treatments (thermotherapy, fumigation, and hot water treatments) and 4) visual field inspections targeted to specific life cycles of the pests and plants.

Avocado Registration and Certification Program

This program provides for the registration of avocado rootstock and scion wood sources when inspected and tested for sunblotch virus. The Avocado Certification program provides for the certification of avocado nursery stock when grown under specific guidelines and inspected for freedom from *Phytophthora cinnamomi*, avocado root rot. Currently, one nursery is participating in the registration program and three nurseries are participating in the certification program.

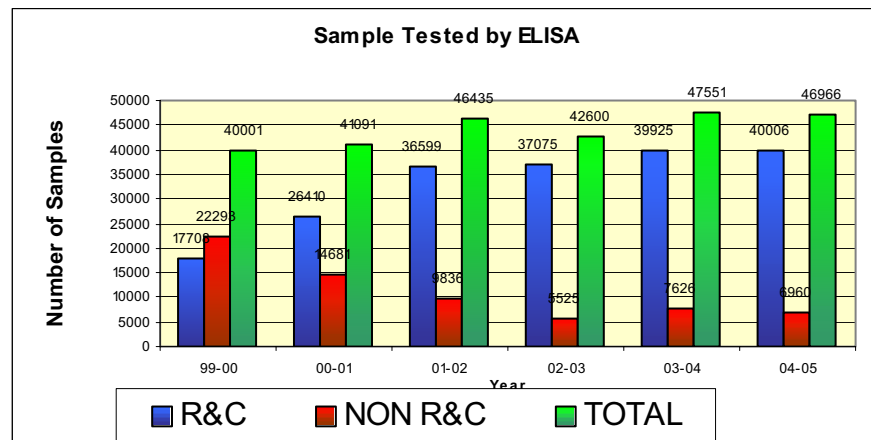
Deciduous Fruit Tree and Nut Tree Registration and Certification Program

In the R&C program for deciduous fruit and nut trees, all trees in a Registered Mother Block, Registered Scion Block and Registered Seed Block are tested annually for viruses. Testing may be done by biological indexing using Shirofugen cherry as an indicator plant or by ELISA, an approved laboratory technique. Trees are tested for Prunus Necrotic Ring-Spot virus and Prune Dwarf Virus by biological indexing at least once every five years and by ELISA for these viruses and others in the other four years. Tested trees may be used as a source of certified propagative material in the year following testing.



In 2004, 18 nurseries participated in the program. The total number of registered trees tested was 40,006 (29,551 by ELISA and 10,455 by Shirofugen indexing), a decrease of 11,894 trees from the previous year.

The total number of trees tested using the ELISA technique was 46,966 (40,006 registered trees and 6,960 service samples), a slight decrease of 585 trees tested by ELISA less than previous year. The service samples are obtained from non-registered trees and

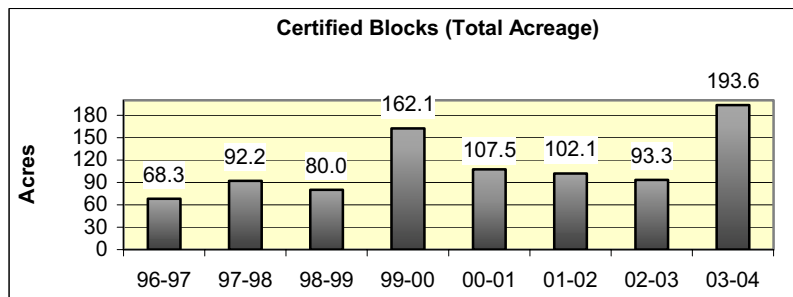
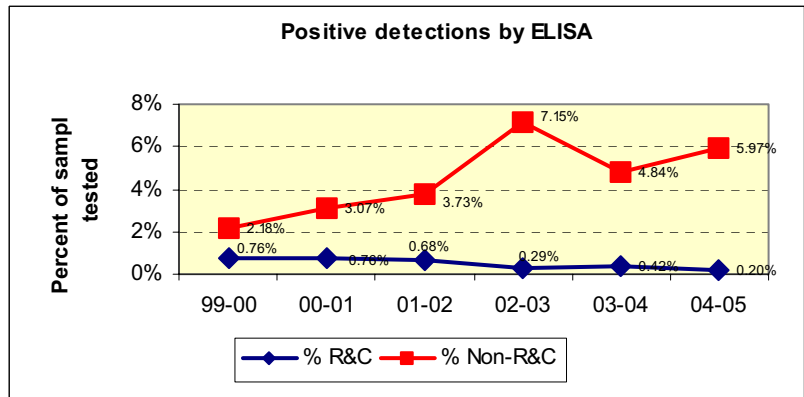


tested as a service to the industry. The Fruit Tree, Nut Tree and Grapevine Improvement Advisory Board (IAB) provides assessment fees to fund the annual testing.

Of the 46,966 trees tested by ELISA, 498 (1.06%) were found positive for viruses. However, only 82 (0.20%) of the registered samples tested positive for viruses. Four hundred sixteen (416, which is 5.97%) of the service samples tested positive for viruses. Of the samples taken from registered trees, 85 (0.81%) tested positive for viruses using the Shirofugen cherry biological indexing technique.

Positive Detections

	R&C(%)	Non-R&C(%)
1999	0.75%	2.18%
2000	0.76%	3.07%
2001	0.67%	3.73%
2002	0.29%	7.15%
2003	0.42%	4.84%
2004	0.20%	5.97%

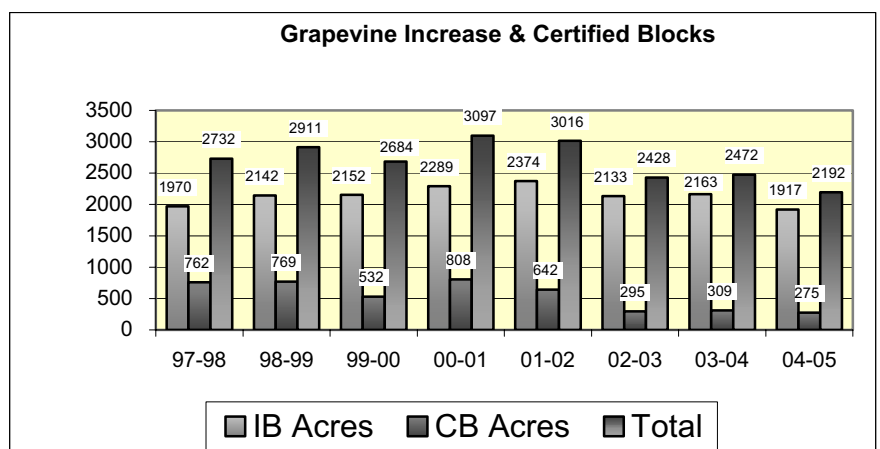


Certified nursery planting more than doubled from 93.3 acres in 2003 to 193.55 in 2004, an increase of 100.25 acres (107%) over the previous year.

Grapevine Registration and Certification Program

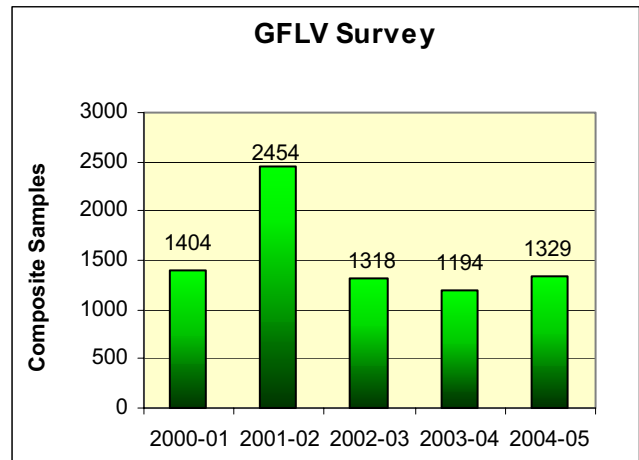
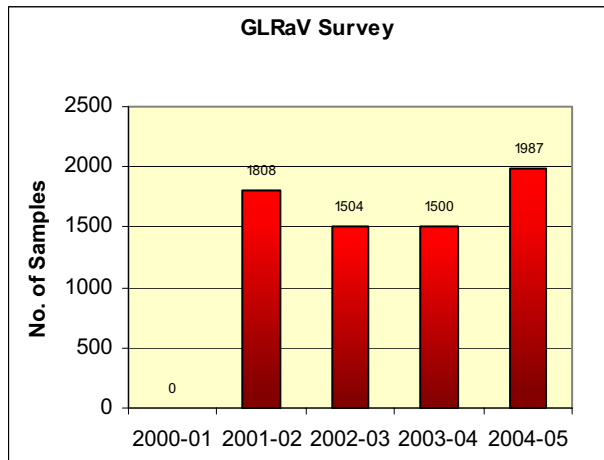
Thirty-six nurseries participated in the program in 2004. Grapevine Increase Block plantings totaled 1,917 acres, a decrease of 246 acres (11.37%) from the previous year. Grapevine certified blocks (nursery plantings) totaled 275 acres and five greenhouse blocks, slightly lower than the previous year's 309 acres.

The CDFA collected and tested 1,329 composite samples for grapevine fan leaf virus (GFLV),



an 11% increase over the previous year. Plants were selected randomly for testing. However, if plants exhibiting typical GFLV symptoms were seen, those plants were also included in the survey. Of the total samples tested, none were positive for GFLV.

In 2004, 1,987 vines were sampled and tested for grapevine leafroll associated viruses (GLRaV). Forty-seven (47) of the samples tested positive.



Citrus Registration and Certification Program

Legislation enacted in 1992 and sponsored by the California citrus nursery industry established the California Citrus Nursery Advisory Board (CCNAB), and provided an assessment to be paid on citrus nursery stock produced and sold. The CCNAB uses those funds to finance research projects to improve the quality of citrus trees, as well as sponsor educational programs that increase the awareness and importance of the citrus nursery industry.

The citrus R&C program provides for the testing of propagative source trees for tristeza to meet the requirements of the citrus tristeza quarantine. Other diseases of importance being tested for as part of the registration and certification program include exocortis and psorosis. Thirty-four (34) citrus nurseries participated in the program in 2004. Two thousand four hundred fifty-six (2,456) citrus seed and scion source trees were sampled and tested for tristeza and other viroids, a decrease of 112 (4.36%) trees from the previous year.

Strawberry Nursery Stock Registration and Certification Program



Twelve nurseries participated in the Strawberry Nursery Stock R&C program in 2004. The strawberry program differs from other registration programs in that foundation stock is maintained by nurserymen in their isolated plantings rather than by the Foundation Plant Service of the University. Strawberry plants in foundation plantings are index-tested annually using *Fragaria vesca* and *Fragaria virginiana* strawberry indicator hosts for the following viruses: mottle, vein-banding, crinkle, mild yellow-edge, necrotic shock, pallidosis, tomato

ringspot, witches' broom, pseudo mild yellow-edge, latent C, leafroll and featherleaf. The CDFA nursery staff index-tested 3,493 foundation plants at the Department's greenhouse facility in Sacramento, an increase of 19.95% over the previous year. Six (6) plants that were indexed tested positive for viruses and were rejected from the program. The CDFA staff visually inspected 729.81 acres of registered and certified strawberry nursery stock for the presence of virus diseases and other pests, an acreage increase of 11.1% from the previous year, and collected and processed 828 nematode samples.

Pome Fruit

The pome fruit tree R&C program provides for the registration of rootstock and scion sources for the propagation of certified nursery stock when inspected and tested for virus diseases and other important pests. Three (3) nurseries are currently participating in the program. In 2004, the CDFA staff inspected and registered a total of 1,407 trees as propagative source trees. Four acres of nursery plantings were inspected and approved to be sold as certified nursery stock.

Seed Garlic

The Seed Garlic certification program provides for the registration of seed garlic for the propagation of certified nursery stock when found free from stem and bulb nematode, *Ditylenchus dipsaci*, and when inspected and found free of white rot fungus, *Sclerotium cepivorum*. Two nurseries participated in 2004. A total of 417.6 acres was inspected and registered, a decrease of 237.4 acres (36.24%) from 2003.



SEED SERVICES

The value of seed sold for planting in California exceeded \$368 million in 2004, an all-time high. The total number of firms registered to sell seed in California remains relatively unchanged at 398.

Seed Services administers the statewide seed law enforcement program that is funded entirely through an annual assessment on the value of seed sold in California by seed labelers and others. The county agricultural commissioners conduct the program, while the staff of the CDFA evaluate the seed enforcement workload and provide information, assistance and training to the counties. Additionally, the CDFA staff work with the seed industry to determine the effectiveness of the program and interact with other states, the United States Department of Agriculture, and with the California Crop Improvement Association, the state seed certification entity. An advisory board of nine seed industry members and two public members provides oversight to the Department.

Program expenditures for 2004 totaled \$1,106,090. Significant program expenditures were the funding of the Department's Seed Laboratory (\$325,500), the Seed Biotechnology Center (\$150,000) at the University of California in Davis, and the Agricultural Commissioners

(\$120,000). In order to cover these expenses, the Seed Advisory Board recommended that the assessment rate be set at \$0.32 per hundred dollars gross annual sales in California for the reporting period. The assessment has increased in the last few years in order to fund the Seed Biotechnology Center. The current assessment combined with program reserves will provide adequate funds to cover program expenditures in 2004-05.

The subvention to county agricultural commissioners for the enforcement of the California Seed Law remains at the maximum of \$120,000 annually, as provided by law. The voluntary program has established annual performance measures as the basis of funding county seed law enforcement workload. By contract, the commissioners have to maintain an 85% compliance level of all seed offered for sale or labeled in their respective counties. In 2003-04, county personnel collected 1,006 official samples from seed lots being offered for sale. In addition, a total of 24 “stop-sale” orders were written on 686,016 lbs. of seed in violation. Eleven of the “stop-sale” orders were placed on lawn seed lots and nine were placed on agricultural seed lots that were out of compliance at the time of inspection.



Since 1997, the Seed Services Program has promoted the TEAM SEED concept to recognize the vital role of county, state and industry personnel in providing the highest quality seed to California agriculture and the public. The Seed Services Program has traditionally offered annual training to county and industry personnel. The training includes reviewing the label requirements for agricultural and vegetable seed as well the proper techniques for drawing official samples from various kinds of seed and different size lots. TEAM SEED activities have currently been reduced as the CDFA mobilizes district personnel to assist in nursery inspection efforts for Sudden Oak Death. The Seed Services Program expects to offer TEAM SEED workshops to interested parties in the fall of 2005.

In addition to enforcement activities, the California Seed Law provides an alternative dispute resolution procedure that assists farmers and labelers to settle disputes through conciliation or mediation when seed fails to perform as represented. In 2004, 39 complaints were filed with the Department. Investigations were initiated or conducted for each complaint. Of the 39 complaints filed, 30 were resolved through conciliation (withdrawal or settlement), one (1) involving a small amount of packet seed shipped from another state was referred to the USDA Seed Regulatory Branch, and eight (8) complaints are currently scheduled for mediation in the spring of 2005. For complaints filed in prior years, five (5) were settled



through mediation and two (2) were released after mediation failed. Mediation services have been provided through the Department's Market Enforcement Branch, which is reimbursed for time and travel to conduct the mediation hearings. Except for an initial filing fee, the cost of these procedures is borne by the Seed Services Program. These seed dispute procedures, which are a mandatory prerequisite to pursuing the matter in court, provide an economical alternative to litigation when the dispute can be resolved.

QUALITY COTTON PROGRAM



The Quality Cotton Program has the primary responsibility of enforcing the San Joaquin Valley Cotton District Laws and Regulations. The Cotton District consists of all counties in the San Joaquin Valley. A 40-member San Joaquin Valley Cotton Board composed of cotton growers, cotton industry representatives, and public members administer it. Cotton growers and industry members are elected to the Board by their peers. One of the Board's major duties is to establish quality standards for San Joaquin Valley Acala and Pima varieties. To accomplish this, the Board has an extensive multi-location cotton variety-testing program. The Board meets at least five times a year to review the

progress of its variety-testing program and determines which new varieties meet or exceed existing quality standards and are superior in some meaningful aspect, such as improved yield or resistance to disease. The exceptional quality and yield of the cottons in the District are a reflection of the Board's sound decisions. Throughout the year, numerous Board committees examine major cotton issues in order to make well-researched recommendations to the full Board.

During 2004, Acala and Pima cotton grown within the San Joaquin Valley Quality Cotton District again had exceptional quality, including the highest fiber strength of any cotton grown in the nation. Due to an exceptionally warm spring, the crop got off to a good start with a majority of the crop planted in March. The weather in 2004 was an ideal growing season for cotton. An exceptionally warm spring allowed most of the growers to plant their cotton in March and the ideal weather produced a record crop. However, rain arrived in October during the harvest season and delayed some growers from finishing their harvest. Although these storms caused some reduction in quality, 2004 will still go down as one of the best cotton crops ever.

The USDA estimated that Upland cotton yields (including Acala) averaged 1,525 pounds of lint per acre, a new record for the San Joaquin Valley, up 15% from last year's harvest of 1,439 pounds. Pima yields were also a record, up 26%, averaging 1,503 pounds of lint per acre compared to 1,192 pounds last year. Cotton acreage in the District was up approximately 4% from last year's record low acreage. CDFA's Pink Bollworm Program reported that in 2004 there were 215,635 acres of Pima and 522,925 acres of Upland (including Acala) cotton planted in the District.

The year 2004 is the fourth full season in which cotton growers were allowed to plant any commercially available variety of cotton in the San Joaquin Valley. This was the result of the

1998 legislation allowing the planting of varieties not previously allowed under the Quality Cotton Law. Section 52981 was added to the Food and Agricultural Code to allow varieties not tested and approved by the San Joaquin Valley Cotton Board to be planted as “non-approved” varieties beginning in 1999. The new law also charges the Department with adopting regulations to ensure that the growing of non-approved varieties does not adversely affect the quality of Acala and Pima approved by the Board. Regulations to implement this law were developed by the Department in conjunction with the cotton industry. Program personnel are responsible for enforcing these regulations. Also added to the law was the authority allowing the Secretary to increase the District assessment to meet additional regulatory costs of enforcing the law.



In 2004, approximately 140,000 acres of non-approved varieties were harvested in the District. This is significantly more than last year's 34,786 acres. All non-approved cotton was marked at harvest and ginning with tags supplied by the Department with one of the following designations: California Pima, California Upland, or SJV Experimental.



There is still considerable interest on the part of researchers to develop new cotton varieties in the District. In 2004, eleven cotton breeders were approved to conduct research on non-approved cotton in the District. The most promising cotton varieties from private and public breeding programs are submitted to the Board for inclusion in its testing program. Genetically enhanced varieties were widely grown in researcher's test plots and for seed increases. Program staff monitored the planting, harvesting, ginning, delinting, and marketing of all experimental cotton.

Five Acala varieties and two Pima varieties were approved by the Board in 2004 to be marketed as SJV Acala and SJV Pima varieties. This increased the number of approved varieties in the District to 59.

In 2004, the assessment rates for the San Joaquin Valley Cotton District were set by the Secretary, upon recommendation from the Board, at \$4.25 per hundredweight of undelinted approved seed and at \$9.00 per hundredweight of undelinted non-approved seed sold or planted within the District. The assessments are the primary source of income for the Board's testing program and the enforcement of the San Joaquin Valley Quality Cotton District Laws and Regulations.

PEST DETECTION AND EMERGENCY PROJECTS BRANCH

The Pest Detection and Emergency Projects (PDEP) Branch performs services which are critical to the mission of California's Plant Health and Pest Prevention Service. This mission is to protect California from the damage caused by the introduction or spread of harmful plant pests. The PDEP Branch contributes to the fulfillment of this mission by initiating and operating programs designed to detect and eradicate exotic pest infestations before they can result in the pest becoming established in California. PDEP accomplishes its tasks by conducting ongoing detection programs for pests likely to enter California each year, by conducting special targeted programs for newly emerging pests, and by developing and implementing action plans and the infrastructure to carry them out should eradication efforts be needed. The Branch works cooperatively with Federal and County officials in its efforts to achieve its goals.

The guiding principle behind the detection program is that new potential pests should be discovered as soon as possible after their introduction into the State. This allows the Branch to maximize the potential for eradication by limiting the area that needs to be treated, thereby allowing the resources of the Branch to be concentrated. This approach also minimizes the impact on the public and the environment by avoiding large area treatment programs. In order to achieve this, the detection system is designed to find insect pests before they infest one-square mile and plant diseases before they infest one-half of a square mile.

A variety of trapping and survey programs are used to reach the goal of detecting invasive pests early enough to allow for eradication. PDEP maintains a trapping network that employs over 130,000 traps statewide for various target pests, especially exotic fruit flies, gypsy moth, and Japanese beetle. This statewide trapping program is detailed in the Insect Trapping Guide maintained by the Branch. The program is administered either via contracts with the county departments of agriculture or via direct participation by the Branch in those counties that choose not to enter into a contract. PDEP biologists conduct a quality control program overseeing all of the Branch's trapping programs. Both County and State run programs are evaluated via this program to ensure that they are performing at the desired level. Trap placement, host choice, timeliness of servicings, record keeping, and ability to identify target insects are all monitored.

The Branch conducts a number of different survey programs. Intensive aircraft inspections are performed to find and eliminate hitchhiking Japanese beetles before they can leave the aircraft and enter the surrounding environment. PDEP staff participates in the ongoing red imported fire ant survey in parts of central and southern California. Other targeted insect surveys are conducted to detect a variety of potentially harmful insects, such as Asian longhorned beetle, cereal leaf beetle, etc. The Branch also performs annual surveys for plant diseases such as citrus canker, Karnal bunt, and plum pox. PDEP staff also participate in inspecting plant shipments into California for diseases as part of the post-entry quarantine program.

Action plans for eradicating pest infestations outline the necessary steps for the elimination of the most serious pests that may require regulatory action. The Branch typically conducts several exotic fruit fly eradication programs each year. In addition, PDEP has a proactive program which uses the continual release of sterilized Mediterranean fruit flies in the Los Angeles basin to prevent infestations of this pest from forming in the first place. This Medfly Exclusion Program (MEP) is the largest of its kind in the United States. The Branch oversees an ongoing eradication and quarantine program for red imported fire ant in several parts of California.

EXOTIC FRUIT FLY PROGRAMS

The California Fruit Fly Program is a multifaceted program designed to maintain California’s fly free status through its pest exclusion, detection, eradication, identification, and public information efforts. The three primary Branch components include the fruit fly detection programs, treatment programs, and a preventive sterile insect technique (SIT) program. The main target pests include various species belonging to five economically important genera: *Anastrepha* (Mexican fruit fly, West Indian fruit fly, etc.), *Bactrocera* (Oriental fruit fly complex, melon fly, guava fruit fly, etc.), *Ceratitis* (primarily Mediterranean fruit fly), *Dacus* (pumpkin fly, etc.) and *Rhagoletis* (Western cherry fruit fly, etc.).

DETECTION

The California exotic fruit fly detection program is a cooperative effort conducted by the CDFA, USDA, and the California county agricultural commissioners. The detection program is designed to detect new introductions of target flies as they occur before they have the opportunity to become established breeding populations. The detection program also supports California’s extensive trade markets, both international and domestic, by providing verifiable assurance that California’s production areas are free from these economically important pests.

The program uses a variety of trap types in combination with several different attractants to target the different species of concern. Statewide, there were over 94,000 traps in place for detection monitoring during the peak warm weather period of April–October 2004 (Table 1), with the Jackson trap being the most widely used (Figure 1). Traps are distributed statewide in a manner so as provide the most detection in areas at high risk for introductions and those with a favorable environment for fruit fly reproduction (Figures 2 and 3). In addition, CDFA also deploys Champ traps baited with Trimedlure and Multilure traps baited with the three-component Biolure for delimitation trapping in response to Medfly finds.

Table 1. Numbers of Fruit Fly Traps by Trap Type and Lure.

TRAP LURE	Jackson Trimedlure	Jackson Cuelure	Jackson Methyl Eugenol	McPhail Yeast	Champ Ammonium Bicarbonate	Yellow Panel Ammonium Acetate
Number	25,481	19,623	20,581	21,746	6467	708



Figure 1. Jackson Trap in Citrus.

Figure 2. Statewide Distribution of Medfly and General Purpose Fruit Fly Traps.

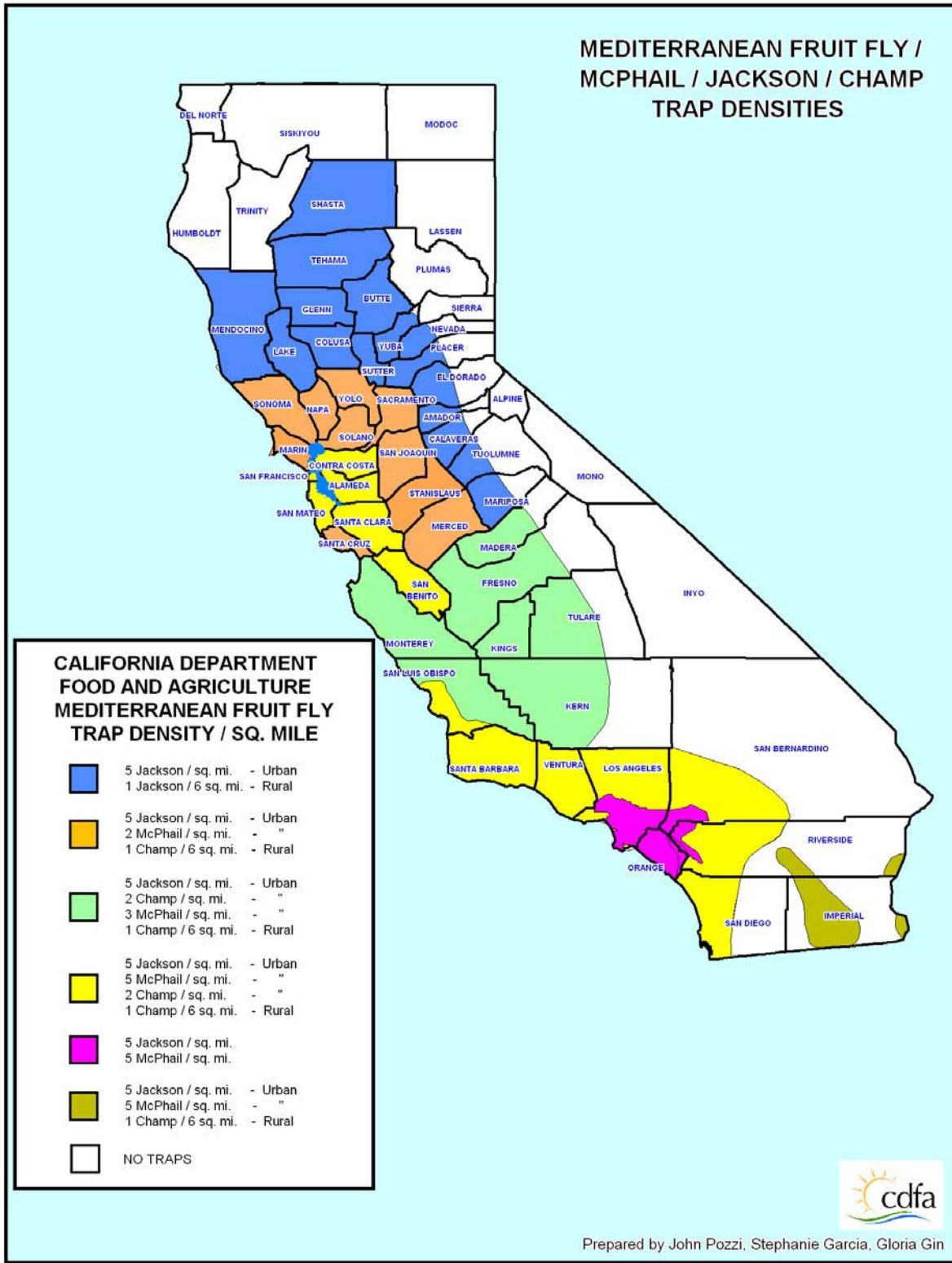
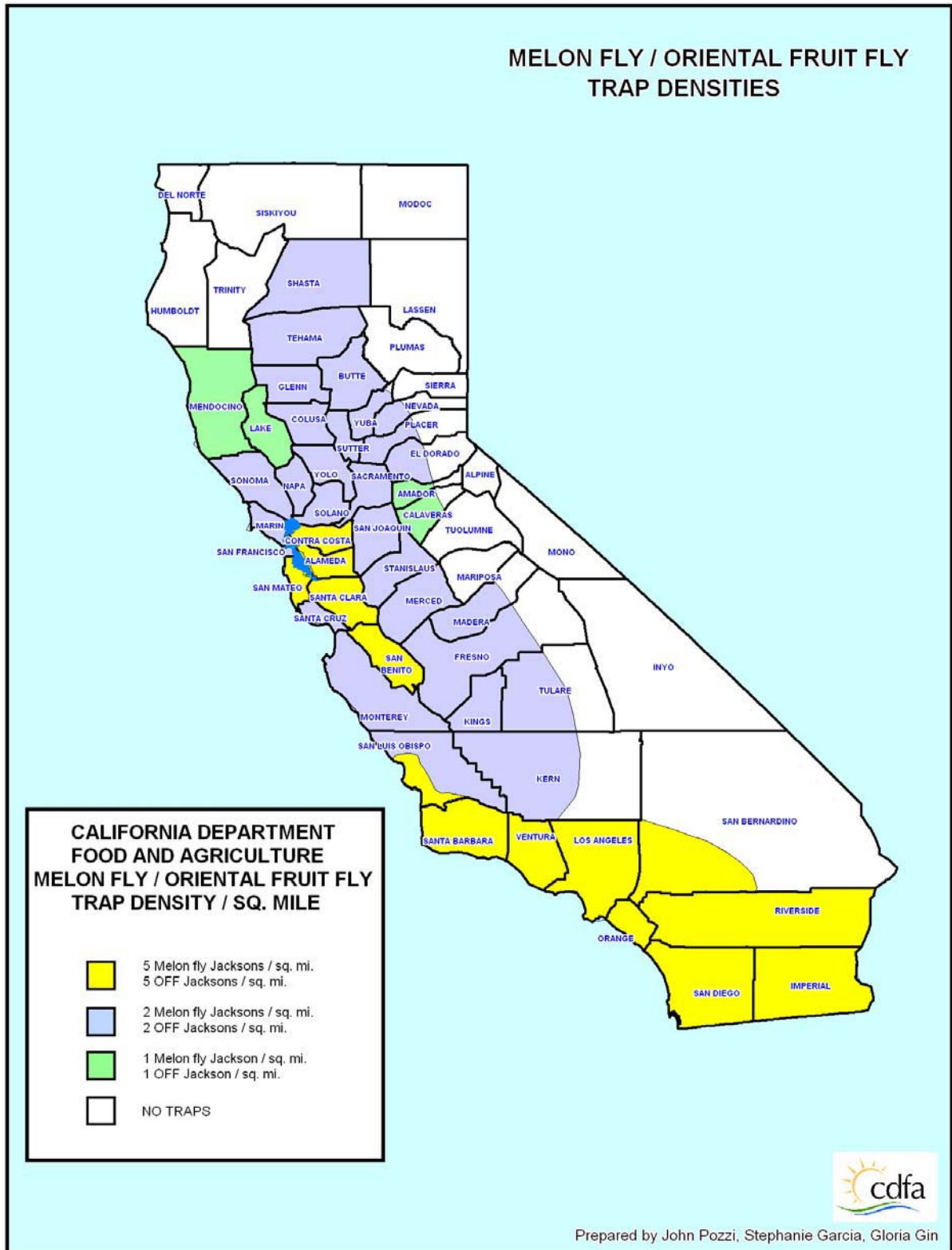


Figure 3. Statewide Distribution of Cuelure and Methyl Eugenol Fruit Fly Traps.



California is constantly at risk to the introduction and establishment of exotic pest fruit flies because of its unique factors such as a favorable Mediterranean climate, extensive availability of host plants due to agricultural and residential plantings, international trade patterns, and culturally diverse population demographics. The magnitude of the risks is well illustrated by the detection results of 2004. There were 77 exotic pest fruit fly adults representing seven species captured in eight California counties in 2004 (Table 2). These finds triggered 37 delimitation trapping programs.

Table 2. Exotic Fruit Flies Detected in California During 2004.

PEST (Fruit Fly)	COUNTY	NUMBER FOUND	TOTAL BY SPECIES
<i>Anastrepha ludens</i> Mexican Fruit Fly	San Diego	1	1
<i>Anastrepha obliqua</i> West Indian Fruit Fly	Riverside	1	1
<i>Anastrepha suspensa</i> Caribbean Fruit Fly	Los Angeles	1	1
<i>Bactrocera correcta</i> Guava Fruit Fly	Alameda	1	9
	Los Angeles	4	
	San Diego	1	
	Santa Clara	2	
	Stanislaus	1	
<i>Bactrocera cucurbitae</i> Melon Fruit Fly	Los Angeles	1	1
<i>Bactrocera dorsalis</i> complex Oriental Fruit Fly complex	Alameda	2	63
	Los Angeles	18	
	Orange	33	
	Riverside	1	
	San Bernardino	5	
	San Diego	3	
	Santa Clara	1	
<i>Ceratitis capitata</i> Mediterranean Fruit Fly	Los Angeles	1	1
TOTAL			77

TREATMENT

CDFA maintains action plans detailing the appropriate emergency responses for the major groups of exotic pest fruit flies. Accordingly, the CDFA's PDEP and Pest Exclusion (PE) Branches, USDA Emergency Projects, and the MEP all have emergency response roles. PDEP staff initiate and conduct delimiting trapping and larval survey activities, the exclusion programs and USDA Emergency Projects initiate and enforce interior quarantines when needed, the MEP initiates and conducts SIT activities, if appropriate, to the particular fly species. CDFA staff from both the detection programs and the MEP are trained to oversee and perform any required pesticide applications. The rapid response of this combined effort is instrumental to eradicate these flies. This action minimizes regulatory action to California agriculture and prevents the economic loss to businesses and the public from quarantines. As an example of the effectiveness of these responses, 6 of the 37 delimitations in 2004 resulted in eradication programs, but only two of these became severe enough to require the initiation of interior quarantines.

ERADICATION PROGRAMS

Oriental Fruit Fly Complex

The Oriental fruit fly complex contains several species that are serious fruit pests and these have been recorded infesting over 230 different kinds of fruit. These flies are Asian in origin, and two species have become established in Hawaii (*Bactrocera dorsalis*) and northeastern South America (*Bactrocera carambolae*). The considerable interspecific similarities and intraspecific variation displayed by members of this complex can make it difficult to diagnose one species from another without a sizable number of specimens.

There were six eradication programs in 2004 for these flies (Table 3). Two quarantine areas were required around the Westchester, Los Angeles County and Santa Ana/Tustin, Orange County eradication areas. The primary treatment method for this group of flies is male annihilation, which combines a lure for sexually mature males with an insecticide. This mixture is applied via specially modified trucks to inanimate objects such as telephone poles, light poles, etc. along the roadside (Figure 4). In addition, bait sprays of the organic pesticide Spinosad® were applied in a 200 meter radius around several of the fly finds in Los Angeles and Orange counties in response to evidence that breeding populations may already exist at those locations.

Eradication has been declared for all of the infestations except in West Hollywood, Los Angeles County.



Figure 4. Male Annihilation Treatment.

Table 3. 2004 Oriental Fruit Fly Complex Eradication Information.

County	City	Number Trapped	Last Find Date	Treatment Sq. Miles	Quarantine Sq. Miles	Eradicated
Alameda	Pleasanton	2	09/09/04	10	-	Yes
Los Angeles	Westchester	2	08/30/04	12	67	Yes
Los Angeles	West Hollywood	6	11/18/04	8	-	In Progress
Orange	Santa Ana/Tustin	31	09/29/04	22	116	Yes
San Bernardino	Chino Hills	2	06/18/04	9	-	Yes
San Bernardino	Montclair	3	06/23/04	8	-	Yes

STERILE INSECT RELEASE

CDFA employs a strategy termed the sterile insect technique (SIT) to both prevent and eradicate populations of exotic fruit flies. The preventive release of sterile Medflies over a 2,489 square mile area of the greater Los Angeles Basin is a program crucial to the efforts to prevent the establishment of this pest in California. With a primary mission to prevent the Medfly from infesting the Los Angeles Basin, the Medfly Exclusion Program (MEP) is the largest fruit fly program using SIT in the United States. The MEP is a cooperatively funded and administered venture between USDA and CDFA.

The MEP began in July 1996 following a successful two-year area wide release of sterile Medflies to eradicate existing populations of Medflies in the Los Angeles Basin. The MEP uses continuous releases of sterile Medflies to prevent Medfly colonization throughout the Los Angeles Basin, including major portions of Los Angeles, Orange, Riverside, and San Bernardino counties.

CDFA maintains a contract with the Mexican government that guarantees California shipments of up to 50 million sterile Mexican fruit fly pupae per week for use in SIT programs. These pupae are reared at the Planta Moscafrut located in Tapachula, Mexico.

Hawaii Fruit Fly Rearing Facility

The Hawaii Fruit Fly Rearing Facility (HFFRF) participates in providing the MEP with high-quality sterile Mediterranean fruit flies for use in the SIT program. The facility is located on the windward side of the island of Oahu approximately 30 miles from the Honolulu International Airport. The facility operates seven days a week, 365 days a year.

The fly currently produced at the HFFRF is a males-only, *temperature sensitive lethal* strain known as “Vienna 7”. The pupae produced at the facility are gamma-irradiated at the nearby USDA facility with Cobalt 60 at a rate of 14.5 KRads. The irradiated pupae are double-inspected prior to being shipped in a refrigerated van to the airport, where they are loaded onto a commercial jet in the evening and delivered to Los Angeles International Airport, ready for pickup by MEP staff the following day.

The facility was designed to produce 100 million pupae per week. During this past year, some major electrical and mechanical modifications were made to increase production capacity. In 2004, the facility shipped 2,648 boxes of pupae to the MEP for an average of approximately 106 million pupae per week.

In addition to consistent quantity, high quality is equally important to achieve. During the year, the HFFRF has consistently maintained the highest quality control ratings as measured against the other supplier of MEP pupae, namely the Guatemala/USDA El Pino facility. The three major tests to determine the fly’s quality are: emergence (the percent of fully-formed, normal adults emerging from pupae), flight ability (the percent of emerged adult flies capable of flying out of a standardized container), and longevity (the percent of flies that survive a 48-hour period without food and water). Results for 2004 are as follows:

<u>Test</u>	<u>CDFA</u>	<u>Guatemala</u>
Emergence	86.38%	79.83%
Flight Ability	80.48%	72.34%
Longevity	62.21%	50.16%

The above tests were performed and measured at the MEP in Los Alamitos and reflect post-irradiated and post-handling quality.

David R. Rumsey Emergence and Release Facility

Each week, 310 million sterile Mediterranean fruit fly pupae are delivered to the David R. Rumsey Emergence and Release Facility located on the Joint Forces Training Base (JFTB) in Los Alamitos. The sterilized pupae are air freighted seven days a week, year-round from production facilities operated by CDFA and USDA in Hawaii and Guatemala, respectively. Four days after the sterile Medflies were received as pupae, they are released as adult flies from fixed wing aircraft over the Los Angeles Basin.

The basic release rate is 62,500 sterile male flies per square mile per week, with a higher rate of 100,000 being used in a historically high-risk area encompassing a 250 square mile region of

central Los Angeles. The typical week features 56 missions flying over 15,000 linear miles to release 200 million sterile Medflies.

To date, the MEP has been highly successful, resulting in a 97% reduction in the number of Medfly infestations in the Los Angeles Basin since the beginning of the preventive releases. After completing eight years of the program, a total of 118 billion sterile Medflies have been released during 21,000 flight missions traveling over 5,000,000 linear miles.

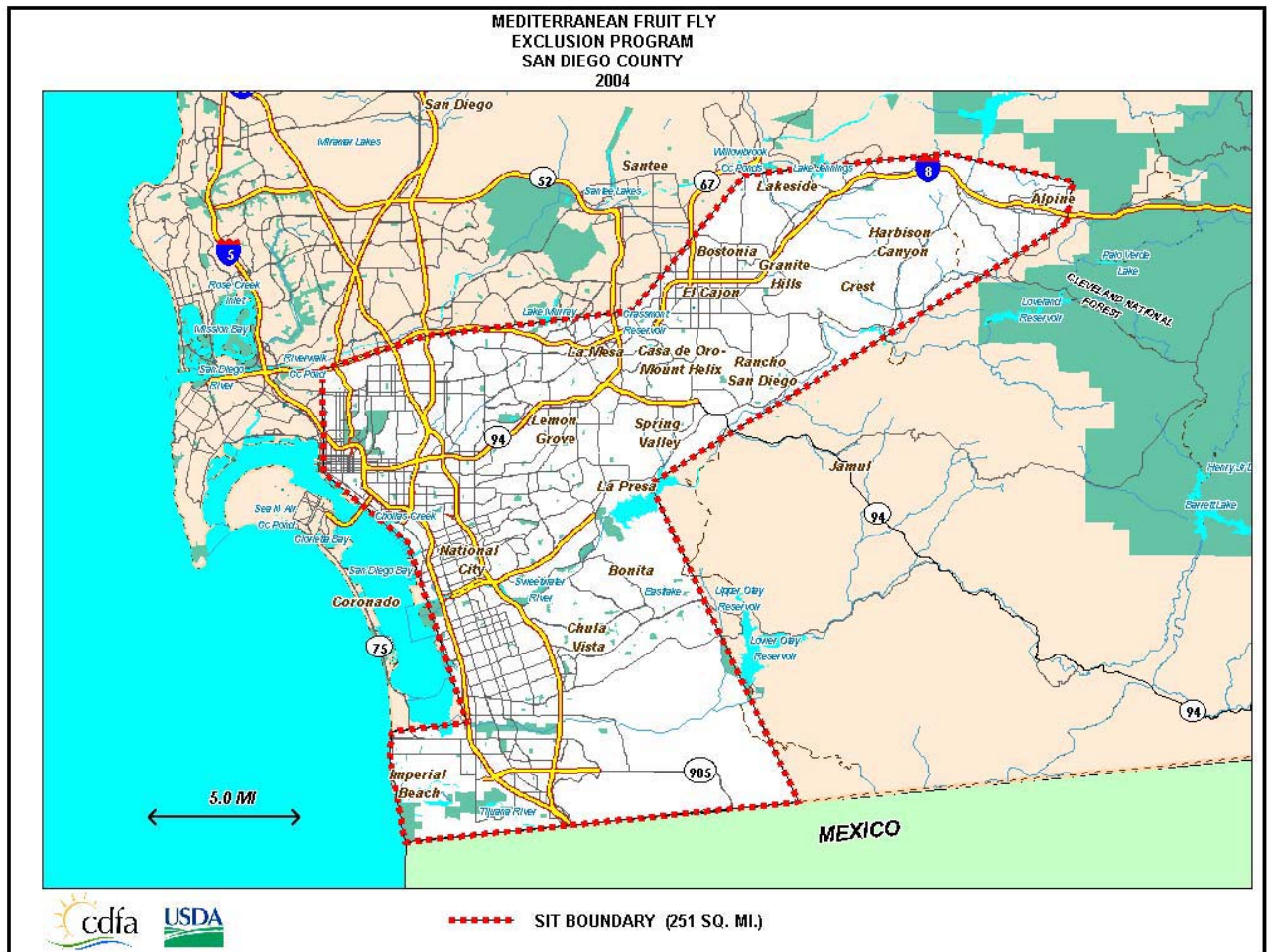
In addition to the normal preventive releases, the program is tasked with conducting sterile release eradication programs for Medfly and for another pest species, the Mexican fruit fly, whenever infestations are found. This year the MEP has been conducting a Medfly preventive release over 251 square miles of San Diego since September 22 in response to a Medfly infestation in neighboring Tijuana, Mexico (see below for more details). In addition, the MEP participated in an eradication SIT over the infested area of Tijuana from November 22 until January 27, at which time USDA International Services began releases from its Tijuana office. As this operation demonstrates, the strategic location of the MEP's operation at the JFTB allows the program to respond swiftly and economically with sterile fruit flies to any infestation in California northward to the Bay Area or southern Arizona and northwestern Mexico, if requested.

Tijuana, Mexico, Medfly Infestation

A Medfly infestation was found in Tijuana, Mexico, on September 16. In response, a preventive release of Medflies was initiated on September 22 covering 251 square miles of San Diego County at a release rate of 100,000 flies per square mile (Figure 5). The release will continue until eradication is declared in Tijuana. Additional traps were also placed along the border with Mexico. No fertile Medflies have been found in San Diego County.

Since September 16, a total of 124 Medflies have been trapped at 34 sites in Tijuana, and the infestation is about 6.5 miles from the San Diego County border. There have been no additional adult detections since October 26. Medfly larvae were found at 31 sites. There were eight aerial applications of Spinosad/bait over an 11 square mile area, with the final treatment completed on November 24. A release of sterile Medflies over the Tijuana infestation began on November 22 and it is continuing. The release area covers 110 square miles. Initially, MEP performed the release of sterile flies, but this was discontinued on January 27, 2005 when those duties were assumed by USDA-International Services based in Tijuana.

Figure 5. Medfly SIT Boundaries in San Diego.



GYPSY MOTH PROGRAMS

The gypsy moth (GM), *Lymantria dispar* (Lepidoptera: Lymantriidae), is a serious forest and urban pest in Europe and eastern North America. GM is currently the most destructive insect attacking hardwood forest and shade trees in the United States. The Asian gypsy moth (AGM) is a race of this species that occurs in eastern Europe and Asia. It is of special concern because the females can fly, unlike GM from elsewhere. AGM is not known to be established in North America. CDFA exclusion efforts and PDEP detection and treatment programs have so far prevented the establishment of these pests in California.

DETECTION

During the 2004 season, 20,818 traps were deployed and monitored as part of California's program to detect and delimit new GM and/or Asian gypsy moth (AGM) infestations. Trap density in the coastal California counties is at three traps per square mile, while two traps per square mile are placed in the remaining counties (Figure 6). Traps are deployed in urban areas and in rural residential areas of 300 or more homes per square mile. California ports that

receive shipments from Russia, the Far East, Japan and other ports at risk for AGM are trapped at 10 traps per square mile around these ports.

This season, a total of three moths were trapped (Table 4) at three sites in three counties. All were single-moth catches. All specimens were analyzed for possible AGM identification using the Mitochondrial DNA test as well as the FS1 Nuclear DNA test. None of the finds were AGM.

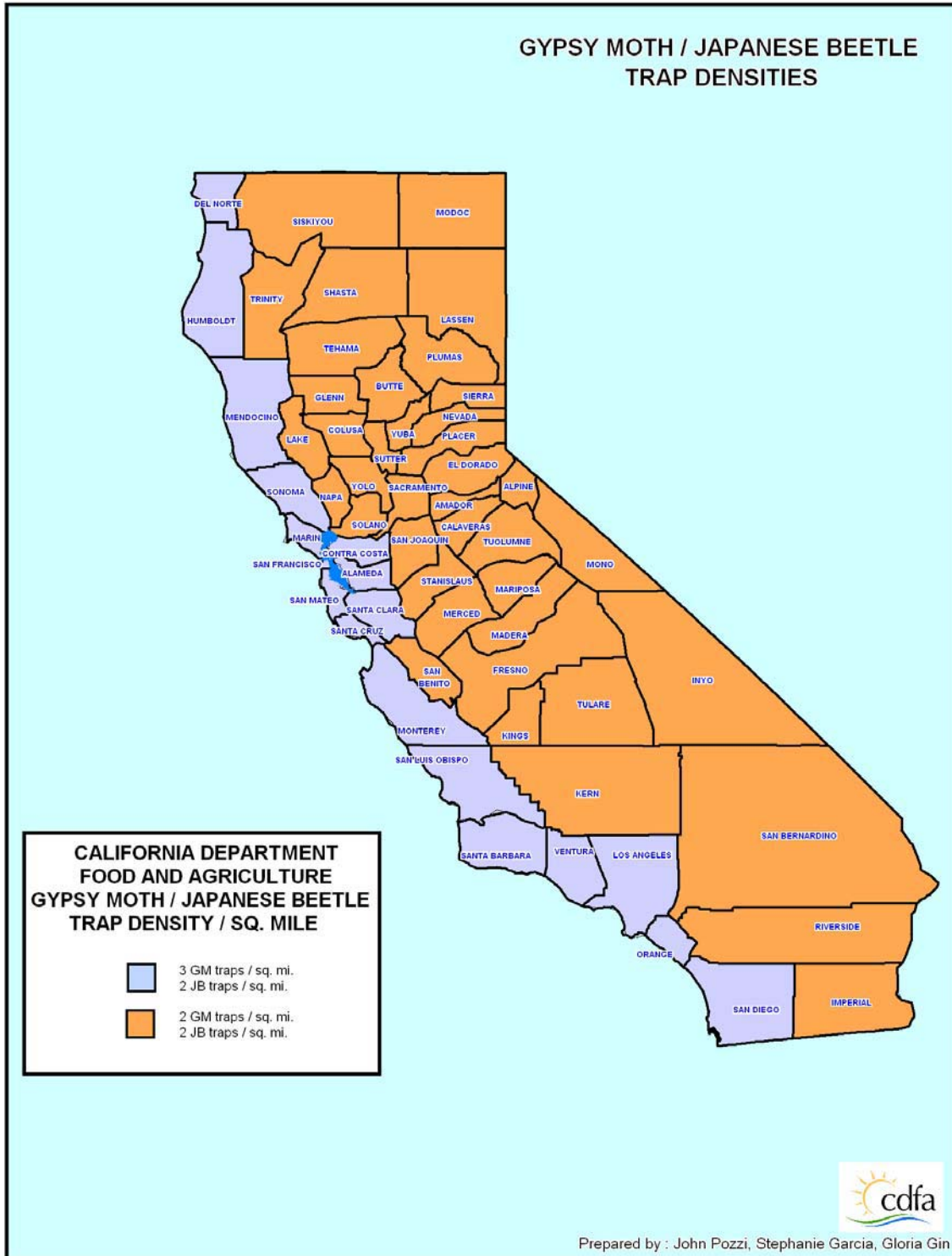
Table 4. 2004 Gypsy Moth Finds.

COUNTY City	Adults Trapped		Total Adults	Properties w/Viable Egg Masses/Pupal Cases*
	Detection	Quarantine		
MARIN Mill Valley	1	0	1	N/A
NEVADA Nevada City	1	0	1	N/A
SAN DIEGO Encinitas	1	0	1	N/A
TOTALS	3	0	3	0

TREATMENT

There were no eradication programs required for 2004.

Figure 6. Statewide Distribution of Gypsy Moth and Japanese Beetle Traps.



ASIAN GYPSY MOTH

High Risk Port Trapping

In response to potential for introduction of AGM via California deep water shipping ports, CDFA conducted high-risk trapping in seven locations statewide. Ten delta traps were placed per square mile over a one-mile buffer around identified locations in Oakland, Port Hueneme, Sacramento, San Diego, San Francisco, Stockton, and Wilmington, resulting in a total of 1,766 traps (including those for AGM delimitation in Wilmington, see below). No moths were trapped as a result of this season's program.

Wilmington AGM Delimitation Trapping

In 2003, one AGM was trapped at Long Beach Harbor in the community of Wilmington. This was the first detection of AGM in California. The AGM was trapped in a high-risk trap placed around the Long Beach Port as part of the statewide AGM high-risk detection program. A Science Advisory Panel convened in early 2004 to develop recommendations for this find. In response to the Panel's recommendations, the GM trapping in the area was enhanced and visual surveys for egg masses and larvae were conducted. Delimitation traps were placed to a five-mile radius, resulting in 62 trappable square miles around the find site. A total of 1,363 traps were placed at a density of 25 traps per square mile. In addition to the delimitation traps, every preferred host tree within the core square mile received a trap, totaling 140 traps, bringing the total to 1,503 traps. No additional moths have been trapped to date. Delimitation trapping will continue during the 2005 season. No further egg mass or larval surveys are currently planned.

JAPANESE BEETLE PROGRAMS

The Japanese beetle (JB), *Popillia japonica* (Coleoptera: Scarabaeidae), is a serious pest of turf, crops and ornamental plants in the eastern United States. It enters the State each year mostly as adult hitchhikers in airplanes originating from infested areas in the east. CDFA exclusion efforts and PDEP detection and treatment programs have so far prevented the establishment of this pest in California.

Detection

The Japanese beetle detection program has two major components: statewide trapping and aircraft detection. During 2004, 12,950 JB traps were deployed throughout the urban and high-risk areas. The trap density for JB detection is two traps per square mile (Figure 6). A high-density trapping array is deployed in a one-mile buffer area around each airport and transfer/sorting facility used by express mail carriers. As a result, there were seven JB's trapped in the proximity to either airports used by express mail carriers or their transfer/sorting facilities located in urban areas (Table 5). Two JB's were trapped in urban/residential areas.

Table 5. Japanese Beetles Trapped in California in 2004.

County	City	Beetles Trapped	Comments
Alameda	Oakland	1	Trapped at Oakland Int'l Airport
	Livermore	1	County detection trap
	San Leandro	1	Trapped near airport
Fresno	Fresno	1	County detection trap
Kings	Lemoore	1	Trapped near airport
Los Angeles	Los Angeles	1	Trapped at LA Int'l Airport
Sacramento	Rancho Cordova	1	Trapped at Mather Field AFB
San Bernardino	Ontario	1	Trapped at Ontario Int'l Airport
San Diego	San Diego	1	Trapped at San Diego Int'l Airport

Airport/Aircraft Inspections

On-board inspections of aircraft from high-risk areas of the eastern United States resulted in the collection of 307 total specimens (63 live) (Table 6).

Table 6. Number of Aircraft Inspected and Beetles Collected by Airport.

County	Airport	Aircraft Inspected	Beetles Collected
Alameda	Oakland International	901	34 : 2 alive
Fresno	Fresno/Yosemite International	17	5 : 2 alive
Los Angeles	Burbank	117	1 : 0 alive
	Long Beach	138	11 : 6 alive
	Los Angeles International	3836	129 : 42 alive
Orange	John Wayne	102	9 : 0 alive
Sacramento	Mather/Sacramento	199	22 : 4 alive
San Bernardino	Ontario International	982	6 : 1 alive
San Diego	Lindbergh Field	2074	68 : 5 alive
San Joaquin	Stockton	33	3 : 1 alive
San Mateo	San Francisco International	1065	2 : 0 alive
Santa Clara	San Jose International	554	17 : 0 alive
TOTALS		10,018	307 : 63 alive

Treatment

There were no eradication programs required for 2004. Seven aircraft were quarantined and treated by USDA staff at Los Angeles International due to the presence of multiple live beetles.

RED IMPORTED FIRE ANT PROGRAM

The red imported fire ant (RIFA), *Solenopsis invicta* (Hymenoptera: Formicidae), is a serious pest in both urban and rural environments in the southeastern United States. RIFA forms large colonies in soil that are composed of thousands of biting and stinging workers. This species displaces native ants and through its venom can inflict severe toxic symptoms on both animals and people. The Branch maintains eradication and regulatory programs against infestations in both the central valley and parts of southern California.

NORTHERN CALIFORNIA – FRESNO, SACRAMENTO AND BAY AREA/DELTA DISTRICTS

Survey Activities

It has been found that the most prevalent pathway for entry of RIFA into the Central Valley has been via infested beehives which are brought into the State for almond pollination. Accordingly, survey plans for the Central Valley concentrate on sampling almond orchards using Spam® bait stations along paths through and around the orchards where bee colonies would normally be placed. By the end of 2004, 311,477 acres, or 52%, of the almond acreage in the state has been surveyed since the program began in 1997, including all of the orchards identified as potentially high-hazard (Figure 7). Thirty-eight sites in the Central Valley have been found infested with RIFA, and 32 of these involved almond orchards where bee colonies were the likely source of introduction. All infestations found prior to 2000 have been eradicated or are under the two-year post-treatment monitoring survey. Of the 22 infestations found during 2000 to the end of 2003, 50% (11 of 22) have been eradicated or are under the two-year post-treatment survey. For many of the remaining 11 infestations, treatment will end after this year. Three new infestations found this year in Merced County are all very light and very small in the actual acreage infested. In October, a new large infestation was found near a preexisting site in Chowchilla. A follow-up visual survey was initiated and to date over 2,800 acres are now considered infested.

Treatment Activities

Treatments used in 2004 included Esteem®, Clinch®, and Extinguish®. A total of 10,874 acres were treated in 2004. All infested properties found prior to 2000 have been eradicated or are under post treatment monitoring (Table 7).

Until the discovery in November of a major RIFA infestation in Madera County, it appeared that RIFA was slowly being eliminated in northern California. The large infestation in Chowchilla has greatly increased the workload and extended the date when eradication can be declared in the Central Valley. The rate at which the number of infestations is being discovered in the San Joaquin Valley is declining. Most of the high-hazard orchards have been identified, treated and eradicated. General survey of almonds continues to produce fewer infested properties. Data acquired through county survey in the Valley continues to indicate that RIFA is not established in areas other than agricultural crops.

Figure 7. RIFA Site Status and Cumulative Survey Results in the Central Valley.

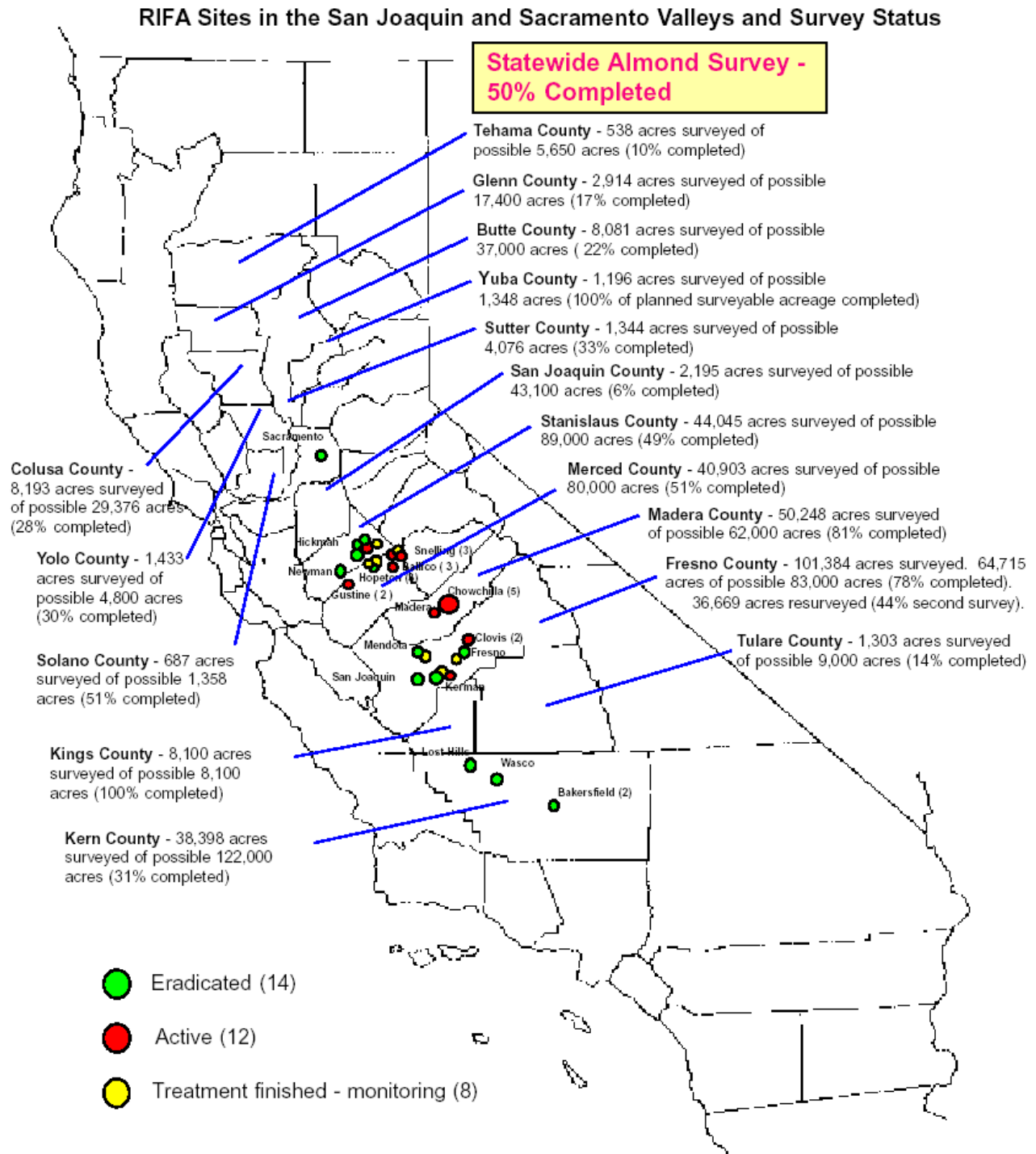


Table 7. Status of All RIFA Infestations in Northern California in 2004.

County	Location	Number	Original acres Infested	Acres Under Treatment	Status
Fresno	Kerman # 1 (1998)	2	1,160	0	Eradicated
	Kerman # 2 (1998)	5	106	0	Monitoring
	Kerman # 3 (2002)	33	81	40	Treating
	Mendota # 1 (1999)	7	160	0	Monitoring
	Mendota # 2 (1999)	8	80	0	Eradicated
	San Joaquin (1999)	11	276	0	Eradicated
	Fresno (1999)	9	Nursery	0	Eradicated
	Clovis (2000)	18	75	1	Treating
	Fresno # 2 (2001)	20	260	0	Monitoring
	Clovis # 2 (2002)	23	24	0	Monitoring
Kern	Lost Hills (1997)	1	464	0	Eradicated
	Wasco (1998)	4	40	0	Eradicated
	Bakersfield (1999)	6	Residence	0	Eradicated
	Bakersfield # 2 (1999)	10	Nursery	0	Eradicated
Madera	Chowchilla (1-5)		approx. 2,800	2,800	Treating
	Chowchilla # 1 (2000)	12			
	Chowchilla # 2 (2000)	13			
	Chowchilla # 3 (2003)	32			
	Chowchilla # 4 (2004)	37			
	Chowchilla # 5 (2004)	38			
	Madera (2002)	29	40	20	Treating
Merced	Ballico # 1 (2004)	34	145	145	Treating
	Ballico # 2 (2004)	35	51	51	Treating
	Ballico # 3 (2004)	36	1	1	Treating
	Hopeton # 1 (2001)	19	6	0	Eradicated
	Hopeton # 2 (2002)	25	320	320	Monitoring
	Hopeton # 3 (2002)	27	160	160	Monitoring
	Snelling # 1 (2001)	22	2,673	1,830	Treating
	Snelling # 2 (2002)	24	617	577	Treating
	Snelling # 3 (2002)	30	8	0	Monitoring
	Gustine (2002)	31	240	240	Treating
	Gustine # 2 (2003)	34	40	26	Treating
Sacramento	Cal Expo (2001)	21	24	0	Eradicated
Stanislaus	Newman (1998)	3	256	0	Eradicated
	Hickman # 1 (2000)	14	999	0	Monitoring
	Hickman # 2 (2000)	15	311	0	Eradicated
	Hickman # 3 (2000)	16	145	0	Eradicated
	Hickman # 4 (2000)	17	15	0	Eradicated
	Hickman # 5 (2002)	28	262	262	Treating
Totals*		38*	11,839	6,473	
Percentage of Original Infested Acres Remaining Under Treatment					54.7%
Percentage of Original Infested Acres Eradicated or Being Monitored of RIFA					45.3%

*Smith River was listed as number 26, but it is doubtful that this was an infestation. Baiting may have attracted lingering ants.

SOUTHERN CALIFORNIA – ORANGE, RIVERSIDE, AND LOS ANGELES COUNTIES

In 1998, CDFA established a quarantine of 865.5 miles for RIFA which encompasses the entire county of Orange (790 sq. mi.) and parts of Riverside (67 sq. mi.) and Los Angeles (8.5 sq. mi.). The quarantine areas remained unchanged in 2004. The quarantines were designed to contain spread of RIFA, by requiring inspection and treatment of articles through which the ant can be spread such as nursery stock, soil, landscaping, and beehives. Treatment activities are being conducted in Orange County by the County Vector Control Districts. Active treatment programs were not conducted in Los Angeles and Riverside counties during 2004.

Regulatory Approach

Regulatory enforcement of the quarantine was accomplished using compliance agreements with businesses or individuals within the quarantine areas that commercially grow, produce, propagate, handle, store, maintain, ship, transport or process regulated articles or commodities. Establishments that are in program-compliance followed specified treatment procedures necessary to ensure RIFA-free status for the articles or commodities intended for movement. Inspection surveys, treatment records, and activities of these establishments were monitored in 2004 to ascertain that all applicable protocols of inspection surveys, treatment procedures, and information records are done in accordance with the compliance agreement. The categories of compliance agreements include: production nurseries, non-production or retail nurseries, landscapers, yard maintenance, golf courses, sod farms, bee-keepers, soil movers, homeowners, hay dealers/handlers, green waste recyclers and landfills. Program staff signed 849 new compliance agreements in 2004 bringing total establishments being monitored to 4,665. In 2004, 1,039, or 70%, of the combined SPAM-bait/visual inspection surveys by the program were conducted in production nurseries, and an additional 2,965 soil site inspections for construction/ swimming pool installation were performed.

The highest priority for quarantine enforcement is the production nurseries. This helps to ensure movement of RIFA-free nursery stock within and outside of the quarantine area. By the end of 2004, 53, or 83%, of the 64 nurseries where RIFA had been found since 1998 had completed treatment protocols and had been declassified as a positive nursery following four consecutive-negative-quarterly-surveys. The remaining 11 nurseries are treating with broadcast bait for RIFA. All nurseries within the quarantine areas, regardless of their status, continued treatments (drenching or incorporating pesticides in soil mixture) in 2004 as a regulatory requirement. In 2004, regulatory inspections of establishments resulted in RIFA finds in nine production nurseries, one soil-movement related site, and seven golf courses. Each site was treated and is being monitored according to program protocols.

Grid Survey

Grid surveys of southern California counties were carried on in 2004. These involved setting three SPAM[®] bait stations at each of four locations per square mile (one per quarter-mile grid). Such baiting surveys have been done by CDFA in southern California counties at the same locations since 2000. The survey employed 17,963 traps over 1,861 square miles of Los Angeles, Orange, Riverside, and San Bernardino counties. Orange County had 24 positive sites and Riverside had 31.

OTHER INVASIVE SPECIES SURVEYS

A variety of other surveys are performed statewide by the Branch each year. Some of these are on an ongoing annual basis, while others are temporary and are in response to new invasive pest threats. PDEP staff may also conduct geographically limited surveys in response to specific questions concerning the presence and/or distribution of potentially invasive species.

ANNUAL INSECT SURVEYS

Africanized Honeybee Monitoring

Africanized honeybee (AHB), *Apis mellifera* (Hymenoptera: Apidae), is a hybrid between one or more of the European honeybee subspecies (*Apis mellifera mellifera*, *Apis mellifera linguica*, etc.) and the African honeybee (*Apis mellifera scutellata*). It can cause serious envenomation symptoms in animals and people because of its aggressive nature, which results in multiple sting incidents. It first migrated into California from Arizona during late 1994, arriving at Blythe, Riverside County. This year AHB has been reported from Madera County for the first time. The total number of California square miles colonized with AHB in 2004 is 63,303, which is an increase of 2,083 square miles from last year. AHB currently colonizes the entire counties of Imperial, Kern, Kings, Los Angeles, Madera, Orange, Riverside, San Bernardino, San Diego, Tulare, Ventura; and portions of Inyo, San Luis Obispo, and Santa Barbara.

Cereal Leaf Beetle Survey

Cereal leaf beetle (CLB), *Oulema melanopus* (Coleoptera: Chrysomelidae), is a serious pest of grains and grasses that occur in the northeastern and northwestern United States, but has not yet become established in California. CLB feeds primarily on cultivated and escaped grains and grasses, such as oats, barley, and wheat. The Branch conducted sweep net surveys at 2,939 sites in 48 counties to monitor for this pest. The 2004 survey was negative for the presence of CLB in California.

Citrus Pest Survey

Surveys were conducted for the following three citrus pests: Asiatic citrus psyllid, *Diaphorina citri* (Homoptera: Psyllidae), citrus leafminer, *Phyllocnistis citrella* (Lepidoptera: Gracillariidae), and brown citrus aphid, *Toxoptera citricida* (Homoptera: Aphididae). All three pests currently occur in Florida, and citrus leafminer is known from two counties in California. The Branch conducted visual surveys in 17 counties in conjunction with the citrus canker survey. The 2004 survey was negative for the presence of Asiatic citrus psyllid and brown citrus aphid in California. However, citrus leafminer was found at seven sites in Coachella Valley, Riverside County, which is an area that was previously known to be infested.

European Corn Borer Trapping

European corn borer (ECB), *Ostrinia nubilalis* (Lepidoptera: Pyralidae), is a serious pest of corn and can infest a wide variety of herbaceous plants. In the U.S. it currently occurs in the eastern and midwestern states. The Branch operated 186 traps in 12 counties to guard against an introduction of this pest. The 2004 survey was negative for the presence of ECB in California.

European Pine Shoot Moth Trapping

European pine shoot moth, *Rhyacionia buoliana* (Lepidoptera: Tortricidae), is a serious pest of various species of pines. In the U.S. it currently occurs across the northern states. The Branch operated 101 traps in 14 counties to guard against an introduction of this pest. The 2004 survey was negative for the presence of European pine shoot moth in California.

Khapra Beetle Trapping

Khapra beetle, *Trogoderma granarium* (Coleoptera: Dermestidae), is a serious pest of many stored grains and grain products. It is not known to occur in the United States. The Branch operated 2,982 traps in 24 counties to guard against an introduction of this pest. The 2004 survey was negative for the presence of khapra beetle in California.

Non-Target Exotic Pest Survey

The non-target Exotic Pest Survey is designed as a general detection tool to look for potential new pests that are not targeted in the existing trapping and survey programs. The survey samples Pherocon® apple maggot traps baited with ammonium acetate + protein hydrolysate and existing McPhails in selected counties. These samples are submitted to the Plant Pest Diagnostics Center for screening. Two leafhopper species new to California were reported from Los Angeles County during 2004, *Peregrinus maidis* (Homoptera: Delphacidae) and *Alconeura cinctella* (Homoptera: Cicadellidae). Only one specimen of *P. maidis* was found, so it is unclear whether it is established. This species is found in Hawaii and Florida and can be a pest of corn because it can transmit the maize streak and maize mosaic viruses. *Alconeura cinctella* was found at more than one site in association with citrus; it occurs in Mexico but its biology is unknown.

Woodboring Beetle Survey

This survey is designed to search for potentially harmful woodboring beetles. The Asian longhorn beetle, *Anaplophora glabripennis* (Coleoptera: Cerambycidae), is of particular concern because it attacks a wide variety of hardwoods and it is currently found in two urban areas in the eastern United States. Both traps and visual surveys were employed. The following three lures are used at each trap site, with each one in a separate Lindgren funnel trap: UHR ethanol, UHR ethanol + UHR alpha-pinene, and cis-verbenol + Ipsdienol + methyl butenol (aka Exotic Ips Lure).

Nine species new to California have been discovered so far. One species represents a new North American record, namely Mediterranean pine engraver, *Orthotomicus erosus* (Coleoptera: Scolytidae), which was found in Fresno, Kern, Madera, Merced, and Tulare counties.

SPECIAL INSECT SURVEYS

Avocado Lace Bug

Avocado lace bug, *Pseudacysta perseae* (Hemiptera: Tingidae), was discovered in August and September infesting avocado trees in the greater San Diego area. Subsequent surveys have delimited the infested area to be over 200 square miles. Chemical and biological control management options are being considered.

Balsam Fir Gall Midge

Balsam gall midge, *Paradiplosis tumifex* (Diptera: Cecidomyiidae), and its inquiline, the balsam fir gall midge, *Dasineura balsamicola* (Diptera: Cecidomyiidae), have been of concern to some counties in regards to the introduction of these pests via Christmas wreaths. Surveys were continued in 2004 to determine the extent of their establishment in California, and *P. tumifex* has now been found in 15 counties.

Grapevine Insect Survey - Sonoma County

A general insect detection survey at two vineyards of the Marimar Torres Estate, Sonoma County, was organized and completed during the week of August 30, 2004. The survey was not focused on any specific insect species or pest, and consisted of four broad based detection activities including sweeping the vines and surrounding plant material (trees, shrubs, and ground plants), visual inspections of the individual grapevines in selected rows, utilizing beat sheets under the vines, and random grapevine leaf alcohol rinses. The county deployed sticky yellow panel traps at both sites for additional insect detection. A total of 23 representative samples were collected and turned into the Plant Pest Diagnostics Center for identification. No significant new pests were found.

ANNUAL DISEASE SURVEYS

During 2004, no significant plant diseases were discovered through annual detection activities. The Branch participated in three ongoing surveys for citrus canker, Karnal bunt and plum pox virus.

Citrus Canker

Statewide Survey

Citrus canker is a bacterial disease caused by *Xanthomonas axonopodis pv. citri*. It affects the leaves, twigs and the fruit of citrus trees and is a major threat to the citrus industry worldwide. In the United States it occurs in Florida where it is under active eradication. The Branch annually performs visual surveys in citrus-producing regions with a goal to target 25% of the total citrus acreage each year on a rotational basis. This year 20,262 acres were surveyed in 17 counties. The 2004 survey was negative for the presence of citrus canker in California.

Piru, Ventura County Incident

In April 2004, citrus budwood entering California from Asia was intercepted and found positive for citrus canker. Staff from PE and PDEP visited the site in Piru, Ventura County, to which the smuggled budwood was destined. Many grafted citrus trees were found at the site as well as at the owner's residence. All citrus plants at the Piru site were destroyed on June 24, 2004. All of the smaller citrus plants at the owner's residence were also destroyed. However, there were several larger established trees at the residence that were inspected for citrus canker symptoms and not destroyed.

A follow-up inspection was performed from October 4-7, 2004. All rootstock sprouts were removed and tested. Additionally, all citrus orchards and nurseries within a one-mile radius of

the original site were surveyed. No evidence of citrus canker was found. In total, 448 plants were removed from the ground. The Piru site will be re-inspected in the spring of 2005.

Karnal Bunt

Tilletia indica, the causal agent of karnal bunt of wheat, is a fungal pathogen that infects the wheat seed at the time of flowering. In 1996, karnal bunt was found in Riverside and Imperial counties of California shortly after having been discovered in Arizona, which resulted in Federal quarantines of the affected areas. CDFA staff completed disease survey in Eastern Riverside County and a small portion of Imperial County through the 2004 wheat harvest. All wheat fields harvested within the regulated area of the Palo Verde Valley of Riverside County were tested for the presence of karnal bunt. Five fields were found to be infested with the disease.

The National Karnal Bunt Survey was completed in California with the cooperation of various branches and county agricultural commissioners offices. The California portion of the Karnal Bunt National Survey was performed according to the USDA protocol for CY 2004. Sixteen samples from 11 counties were collected; all were negative for karnal bunt.

Plum Pox Virus

Plum Pox Virus (PPV), also known as Sharka, is considered to be the most devastating disease of stonefruit in the world. The disease was detected in the United States for the first time in 1999 in Pennsylvania, and shortly thereafter was found in Ontario, Canada. In the United States it is only known to occur in Pennsylvania where it is under active eradication. The Branch annually performs surveys in stonefruit-producing regions by sampling 25% of the trees in each orchard, in accordance with USDA protocol. In addition, trees used as sources of budwood, seed, or varietal development at the University of California Foundation Plant Material Foundation Block and at the Wolfskill Experimental Orchard in Winters, California, were sampled at the 100% level. A total of 1,333 acres were surveyed in 21 counties, resulting in the collection of 29,465 samples. The 2004 survey was negative for the presence of plum pox virus in California.

STATEWIDE POST-ENTRY QUARANTINE PROGRAM

The statewide post-entry quarantine program is responsible for inspecting plant shipments which have already arrived in California for the presence of diseases. In 2004, PDEP staff visited 84 sites in 28 counties and inspected 1,073,191 plants from 280 shipments, releasing 736,057 of the plants.

INTEGRATED PEST CONTROL BRANCH

The Integrated Pest Control Branch conducts a wide range of pest management and weed eradication projects in cooperation with growers, agricultural commissioners and federal agencies. The biological control and vertebrate pest management functions are managed by this branch. Assessments and fees are collected for some program activities and services. The branch contracts with counties, federal agencies, other California state agencies, research agencies and private businesses for various program components. Activities of five projects are coordinated through recommendations of three boards (Pink Bollworm, Beet Curly Top Virus, Tristeza) and two committees (Noxious Weed Management Oversight and Vertebrate Pest Control Advisory Committee).

BEET CURLY TOP VIRUS

Beet curly top virus (BCTV) is an extremely serious plant virus affecting several hundred varieties of ornamental and commercial crops in California. The only known vector of this virus is the sugar beet leafhopper (BLH), *Circulifer tenellus* (Baker).

BCTV is highly destructive to commercially produced sugar beets, tomatoes, peppers, cucumbers, muskmelons, watermelon, squash, pumpkins, green and dry beans, spinach and varieties of vine seed. Because of the threat to commercial crops, the growers of susceptible crops contribute 100 percent of the funds necessary to control BCTV in California. BCTV also infects backyard gardens upon which many people in California depend to provide fresh table vegetables.

The Curly Top Virus Control Program (CTVCP) utilizes intensive surveys to locate and monitor BLH populations throughout the year. Once the populations are located, they are evaluated as to the amount of virus in BLH samples, potential for migration of BLHs to susceptible crops in the area, and feasibility of control versus natural mortality due to parasites, predators or weather trends affecting host plants.

The general pest control strategy developed by the CTVCP is to:

1. Reduce the potential number of over-wintering female BLHs through the application of insecticide on Russian thistle and other weed hosts in the early fall.
2. Further reduce surviving gravid over-wintering BLH females, prior to egg deposition, once they have concentrated on winter host plants.
3. Selectively treat areas of habitat where a spring population of BLH has developed preventing migration to crops during late spring and early summer.

The goals of the CTVCP for 2004 were to:

1. Monitor and selectively suppress over-wintering female BLH populations on winter host plants prior to egg deposition.
2. Locate, monitor and selectively suppress the spring hatch until they migrate into susceptible crops.

3. Assess the program's success by surveying susceptible crops for BCTV.
4. Map all Russian thistle acreage and suppress high BLH populations prior to dispersal to over-wintering areas.
5. Continue to support and solicit research that will improve the efficiency of BLH control, enabling the CTVCP to use less insecticide while maintaining BCTV damage below economic levels.

During 2004, using aircraft and ground spray equipment, a total of 51,385 acres was treated with Malathion to control BLH populations. The acreage totals for 2004 were below the 10-year treatment average of roughly 84,000 acres. Most areas on the west side of the San Joaquin Valley received below normal winter rainfall, which left favorable host plant conditions in some historical breeding grounds. BCTV infection in susceptible crops was observed with less frequency than in the spring of 2003.

Winter Treatment: Several storm systems in late December were sufficient to germinate winter host plants throughout the winter treatment area. BLH survey during the first part of January found the BLH population moving into the winter treatment area. By the middle of January, the overwintering BLH population was found scattered over the rangeland without the benefit of heavy grass cover to push them into south facing slopes. Also, the average egg count had risen to three to six mature eggs. From January 16 through 18, Program staff treated approximately 6,600 acres of rangeland to control overwintering BLHs.

Spring Treatment: During the first of March, above normal temperatures accelerated the development of rangeland vegetation and the BLH population. At the end of the warm period, much of the peppergrass was drying and some filaree was showing stress. Due to these weather conditions, BLH populations did not develop as expected, therefore spring treatment in the area was smaller than first anticipated. A total of 29,820 acres of rangeland was treated in Kern, Kings, and Fresno counties to control BLH populations between March 30 and April 8, 2004.

Fall Treatment: Throughout the west side of the southern San Joaquin Valley, Russian thistle was the most dominant summer host plant. By mid summer, approximately 30,000 acres were mapped and permission from property owners to survey and potentially treat property was requested in writing through a total of 271 waiver letters.

While a few fields showed a steady increase of BLH numbers on Russian thistle, throughout the rest of the San Joaquin Valley BLH numbers remained fairly low and constant through the summer averaging between two to five per single net sweep. BLH numbers began to increase slightly in some locations, but not as much migration was occurring as was anticipated. Cooler nights and increasingly shorter days also triggered a hatch of BLH nymphs in most locations. Some locations in Kern County saw a decrease in adults as the nymphs emerged.

A total of 10,455 acres were treated from October 22 through 24 to control BLH populations on the west side of Kings, Kern, and Fresno counties. Kill checks taken 48 hours after treatment in Kern County showed an average reduction of 93 percent.

BIOLOGICAL CONTROL

Key Highlights for the Biological Control Program for 2004 include:

- A rust pathogen of yellow starthistle was released in 25 new sites in 20 counties in 2004.
- Introduced parasites of the lygus bug attacked up to 90 percent of this pest based on late summer samples from Sacramento. It appears that the parasites have become established in the coastal central California strawberry-growing region.
- Introduced parasites of the pink hibiscus mealybug have reduced densities of this pest by over 95 percent in Imperial County.
- High levels of parasitism of the red gum lerp psyllid were found in 2004 and the parasites are playing a significant role in reducing the impact from this pest.
- Olive fly parasites have been brought into California for testing against native and other exotic fruit flies as a prelude to their being released.

The primary objective of the Biological Control Program is to implement self-sustaining biological controls for serious insect and weed pests in California. The Biological Control Program is divided into two working groups: one for insect pests and one for weeds.

Insect Pests

Olive Fruit Fly: The Biological Control Program has formed a research team consisting of United States Department of Agriculture, Animal and Plant Health Inspection Service, Plant Pest Quarantine (USDA-APHIS-PPQ) Western Region, USDA, Agricultural Research Service (ARS), European Biological Laboratory, University of California, and Texas A&M University to implement a biological control program against the olive fly. USDA-ARS scientist Kim Hoelmer and California Department of Food and Agriculture (CDFA) scientist Charles Pickett collected parasitoids in South Africa and Namibia during the spring of 2004. Robert Wharton, Texas A&M, collected in East Africa and Vaughn Walters, University of Stellenbosch, South Africa helped with collections in South Africa. These collection efforts resulted in several promising candidates for use as biological control agents in California. Parasitoids were shipped to the European Biological Control Laboratory and to the quarantine facility at the University of California, Berkeley. Cooperators Kent Daane and Hannah Nadel, University of California, Berkeley continued their host range testing of several olive fly parasitoids in quarantine at the University of California, Berkeley. The data from these tests are still being evaluated.

Lygus Bug (Western tarnished plant bug): Lygus bug is a serious pest of cotton, strawberries, and most other crops grown for seed in California. It has developed resistance to traditional insecticides and newer, effective products cause outbreaks of other pests. Field surveys showed that this pest lacks nymphal parasitoids. The exotic nymphal parasitoid, *Peristenus* spp. (*P. stygicus* and *P. digoneutis*), were produced in cultures and released at several locations in 2004. Parasitism levels by *Peristenus* spp. continued to rise at the original release site in Sacramento (last releases occurred in 2001) and reached 90 percent in late summer 2004. Lygus bug numbers at this site were less than half of what they have been in previous years. Within season recoveries have been made of *Peristenus stygicus* from lygus bug collected on the central Coast, a major strawberry growing region. The increasing densities of

Peristenus stygicus and *P. digoneutis* on the population of lygus bug at the field site in Sacramento suggest that these species may have permanently established in northern California. Within season recoveries from sites along the central California coast suggest that these parasitoids may easily establish in this region.

Silverleaf Whitefly: The silverleaf whitefly (SLWF) invaded California in the late 1980's. During the mid 1990's, a major effort was made by the USDA-ARS, USDA-APHIS, and CDFA to import and establish new exotic parasitoids that would attack this biotype whitefly. Since the last releases in 2000, we have been surveying Imperial and San Joaquin valleys for the persistence and species composition of the parasitoid guild that attacks this whitefly. In the fall, late instar whiteflies were sampled from 42 locations across Fresno, Kern, and Tulare counties in the San Joaquin Valley. Of 461 parasitized pupae recovered in these samples, 56 percent were the exotic *Eretmocerus* spp. Released earlier. Most parasitoids were identified as *Eretmocerus mundulus* (ex. Spain), although there is some question whether some parasitoid individuals represented a hybrid between *Er. Mundus* and *Er. Hyati*. Samples from the western half of Kern County were virtually absent of whitefly parasitoids at the beginning of this project in 1995. This survey was repeated in 2004 and the processing of samples is now underway.

In Imperial County during 2004, the whitefly parasite guild was sampled from commercial cantaloupe and cotton fields, and from cotton, okra, and basil plants in the long-term insectary field plot. Processing of the samples is now underway.

While these results are preliminary, it appears that several new species of parasitic Hymenoptera (Aphelinidae) have now been established on the SLWF in urban and agricultural areas of Kern and Imperial counties. The majority of parasites emerging from field samples were composed largely of exotic taxa, showing that these beneficial species are having a regional impact on the natural enemy complex of the SLWF.

Red Gum Lerp Psyllid: The CDFA initiated a parasitoid-rearing program in cooperation with Dr. Donald Dahlsten of the University of California, Berkeley, to establish *Psyllaephagus bliteus*, an exotic parasitoid imported from Australia. From 2001 to March 2003, the Biological Control Program's insectary in Sacramento produced and released over 48,000 parasites statewide. In 2003, we performed a survey conducted from August through October 2003 of over 40 locations to determine the status of the parasite populations. The results showed that *P. bliteus* was well on its way toward establishment at all but two locations. These sites were sampled again in 2004. The samples have not been processed but high levels of parasitism were recorded at several sites where it is quite apparent that the parasitoid is playing a significant role in reducing the impact of this severe pest of red gum eucalyptus.

Pink Hibiscus Mealybug: In August 1999, the pink hibiscus mealybug (PHM) was found in North America for the first time in the communities of Calexico and El Centro, California, and in the northern portion of the city of Mexicali, Mexico. Shortly thereafter, an insectary was setup in El Centro during the winter of 1999 through 2000. From this insectary, three species of parasites were released throughout the infested area over the last five years. In 2004, the third parasite, *Allotropa* sp. nr. *mecrida* (Platygastridae) was released (greater than 200,000) throughout the infested area in Imperial County and the Mexicali Valley in northern Mexico. This is the second year of releases for this parasite and the last year of releases for this project.

The impact of the parasite complex on the density of PHMs is being monitored throughout the infested area in Imperial County, California. Mealybug population density counts and percent parasitism data have been collected at regular intervals since 1999. Following introduction of

the parasitoids, mealybug densities have declined greater than 98 percent and the risk for movement and establishment in new locations in California has been greatly minimized. The parasite, *Anagyrus kamali*, has persisted at each release site and parasitism commonly exceeds 50 percent. The parasite, *Gyranusoidea indica*, has seldom been recovered during the summer and early fall; although it is common in mealybugs collected in late fall tree band samples. The status of *A. nr. mecrida* is still under evaluation.

Cotton Aphid: Efforts to develop biological control of the cotton aphid in California continued in 2004 through releases of *Aphelinus* near *paramali*, and *Aphelinus gossypii* (Hymenoptera: Aphelinidae) in Kern County, California. The objective of this effort is to reduce densities of the cotton aphid by constructing a natural enemy complex that has more species richness than currently exists in the San Joaquin Valley. During 2004, approximately 28,400 *A. near paramali* and 7,500 *A. gossypii* were released from July 26 through September 21 at five sites in Kern County. The status of these releases is still under evaluation. In addition to continued releases of the two *Aphelinus* spp., future efforts will be directed at obtaining two new parasites, *Lipolexis oregmae* (Mackauer) and *Trioxys indicus* (Subba Rao and Sharma), to establish lab colonies and to test the suitability of these two parasites for use in California.

Vine Mealybug: The vine mealybug, *Planococcus ficus* (Signoret), is a serious pest of grape vineyards throughout the grape-growing regions of California. It causes direct damage to the berries, decline in grapevines, and may vector leafroll viruses. Working cooperatively with the University of California Cooperative Extension Service and the county agricultural commissioners, CDFA assisted with the distribution of pheromone traps to county biologists and other interested parties to monitor the spread of the mealybug. The CDFA also provided information on the biology and management of this insect.

Weed Pests

Squarrose Knapweed: Studies on the impact of biological control insects released against squarrose knapweed were continued in 2004. Three plots are being intensely monitored. Three knapweed insects (*Larinus minutus* and *Bangasternus fausti*, two seed head weevils, and *Sphenoptera jugoslovica*, a root-boring buprestid) were released and the plant populations monitored in 1998, 2002, and 2003 at sites in Lassen County and eastern and central Shasta County, respectively. Seed head attack rates exceeded 50 percent at each site within two years following release by the two seed head weevils.

Yellow Starthistle: The first release of the newly approved rust disease, *Puccinia jaceae* var. *solstitialis* was made on July 9, 2003 at a research site in Napa County. In 2004, the rust was released at 25 new locations in 20 counties using spores propagated in our greenhouse in Sacramento during 2003. Each release occurred in a plot one meter by one meter using a suspension of spores and water. Follow-up surveys showed evidence of infection at every site and evidence of spread at two sites: one site had spread one to two meters away, the other, up to six meters. Once the site dried out, usually by July, the rust was no longer active. Objectives for 2005 are two-fold: to monitor all 2004 release sites for infection and spread in the spring and to make releases in another 20 new locations. This rust disease is the first pathogen approved for release as a classical biological control agent in the United States. It is also the first biological control agent to be released against yellow starthistle in over 10 years and is the first of the second crop of agents being examined for release against this weed. By attacking the plant foliage, this agent has a mode of action different from, and hopefully complementary to the attack by the established seed head insects.

A field study on the long-term impact of all established biological control agents on yellow starthistle populations continued at three sites in 2004. Two sites, located in Sonoma and Yolo counties, were established in 1993; the third site in Solano County was added in 2003 to replace the long-term site in Placer County lost in 2001. Plant populations have continued to decline at all three sites. In 2004, seedling and mature plant densities were very low. Spring was unusually short and hot, dry weather caused plant development to accelerate relative to years past. Consequently, attack by the seed head insects is expected to be lower than last year. Field samples are now being processed and summaries will be available next spring. Long-term monitoring of these three sites will continue.

Purple Loosestrife: Releases of biological control insects occurred at three purple loosestrife populations in 2004. Approximately 21,000 *Galerucella* spp., a leaf beetle, were released in a large infestation of purple loosestrife in Butte County. The beetles were collected near Moses Lake, Washington with the help of Craig Conley, United States Bureau of Land Management. A total of 600 *Hylobius transversovittatus* root weevils were released in Butte, Kern, and Shasta counties (200 adults per county). Margorie Gilford, USDA-ARS Purple Loosestrife Laboratory, Niles, Michigan provided the root weevils. Approximately 7,400 adults of the flower weevil, *Nanophyes marmoratus*, were released in three counties: 3,000 in Butte County, 2,200 in Kern County, and 2,200 in Shasta County. The flower weevils were collected by Marjolean Schat and Kerby Winters, USDA-APHIS-PPQ, from established populations near Ontario, Oregon.

Water Hyacinth: Approximately 7,000 adults of the chevroned water hyacinth weevil, *Neochetina bruchi*, were released in May 2004, at Seven Mile Slough, a water canal choked with water hyacinth east of Stockton, San Joaquin County. The weevils were from two sources: 3,500 were collected from a field site southeast of Stockton and the remaining weevils were from greenhouse colonies maintained in Sacramento. The release was for a field study by USDA-ARS to examine the relationship between plant nitrogen content and weevil attack on the plant.

A field study examining the population dynamics of the weevil, *N. burchi*, in the Sacramento/San Joaquin River Delta continued in 2004. Interim results show that very few larvae or pupae survived the winter at the two study sites. Most of the weevils that survived the winter were adults. Those adults that survived to April began egg production that produced the first cohort of the year. The resulting adults produced a second, much larger generation of weevils in summer (August and September). The adults from this generation entered the winter. The attack rate on the plants was fairly high and similar to rates reported in other locations (e.g. Florida and Mexico). Analysis of the data obtained from this study is currently underway.

HYDRILLA ERADICATION PROGRAM

Hydrilla is an invasive, submersed, non-native aquatic plant that is a threat to the water resources of the state. Hydrilla can reduce water storage capacity of lakes, ponds, and reservoirs; impede movement in streams, canals, and drains; jam water control structures and choke hydroelectric generators; impede navigation; degrade fish and wildlife habitat; and endanger public health by reducing water flow and producing mosquito breeding habitat. Hydrilla has been called the world's worst submersed aquatic weed. Annual control costs in highly infested states, such as Florida and Texas, are in the tens of millions of dollars.

Key accomplishments for 2004 include:

- No hydrilla was detected in Clear Lake for the first time since 1994.
- The quarantine areas in Shasta and Imperial counties were reduced in size.
- Hydrilla was detected and treated in a single pond in Nevada County.
- Hydrilla was detected and removed in several aquatic plant nurseries.

The Hydrilla (*Hydrilla verticillata*) Eradication Program reached some success milestones in 2004. The quarantine zones in both Shasta and Imperial counties were reduced in area. For the first time, no hydrilla was detected in Clear Lake since the program began there in 1994. For the second year in a row, no hydrilla was detected anywhere in the Eastman Lake/Chowchilla River system. In contrast, one new infestation was found in the field in Nevada County. Fortunately, it seems to be contained to one pond. In addition, hydrilla was detected and eradicated from several aquatic plant nurseries in the state. This report begins with a brief review of the threat that this noxious, aquatic weed poses to the state's waterways, then gives a summary of the Department's authority and mandate to eradicate hydrilla, proceeds with a brief history and overview of the Hydrilla Eradication Program, and concludes with program highlights for 2004.

The California Department of Food and Agriculture is the Lead Agency for the Eradication of Hydrilla

The California Department of Food and Agriculture (CDFA) is the lead agency in California for the eradication of hydrilla (California Food and Agricultural Code (CFAC) Sections 4068 and 7271). In 1977, after the first California hydrilla find, the California Legislature authorized the CDFA Secretary to initiate a survey and detection program for hydrilla, and to eradicate hydrilla wherever feasible (CFAC Section 4068). In 1985, after hydrilla was found in Redding, near the Sacramento River, the Governor of the State of California declared a "State of Emergency" to eradicate hydrilla. In 1994, the CDFA Secretary declared an "emergency situation" in regards to the hydrilla infestation discovered in that year in Clear Lake. Similar declarations have been issued for most of the current hydrilla infestations. In 2004, CDFA Secretary Kawamura declared the latest emergency after hydrilla was detected in Nevada County. In addition, hydrilla is listed as an A-rated aquatic noxious weed by the CDFA.

Though the CDFA is the lead agency for hydrilla eradication, the CDFA administers the Hydrilla Eradication Program with the cooperation and support of the local county agricultural commissioners and other federal, state, county, and city agencies, Native American tribes, and

private individuals and entities. In addition, the CDFA Hydrilla Eradication Program received financial and in-kind support in 2004 from the California Department of Boating and Waterways, California Department of Water Resources, United States Department of the Interior-Bureau of Reclamation, United States Army Corps of Engineers-Eastman Lake, Yolo County Flood Control and Water Conservation District, Lake County Department of Agriculture, and Lake County Department of Public Works.

History and Overview of the Hydrilla Eradication Program

Hydrilla has been found in various places in the United States, including California. The dioecious form of hydrilla was first identified in Florida in the 1960's, where it is believed to have been introduced in the 1950's. This infestation spread throughout the southeastern United States and Texas. It was first found in California in 1976 in a 31-acre man-made lake in Marysville, Yuba County (from which it has since been eradicated). The monoecious form was first detected in the Potomac River, near Washington, D.C. in the 1980's. It has since spread into a number of the southern states, into Washington State, and was first found in California in 1993 at an aquatic nursery in Visalia, Tulare County (from which it has since been eradicated).

Since 1976, hydrilla has been introduced into California waterways 29 separate times, in 18 counties (not counting detections in plant nurseries). Of these 29 separate hydrilla introductions, the Hydrilla Eradication Program has eradicated hydrilla from 19 introduction sites in the following 12 counties: Los Angeles, Monterey, Riverside, San Bernardino, San Diego, San Francisco, Santa Barbara, Shasta, Sonoma, Sutter, Tulare, and Yuba. The Hydrilla Eradication Program is currently eradicating hydrilla from the following nine counties: Calaveras, Imperial, Lake, Madera, Mariposa, Nevada, Shasta, Tulare, and Yuba.

Every year, program crews survey all known infested waterways, and high-risk lakes, ponds, reservoirs, streams, canals, and other waterways in the state. The Hydrilla Eradication Program also investigates all reports from the public on potential new infestations. In 2004, one new hydrilla-infested site was found in a fire control pond at a waste disposal facility in Nevada County.

The Hydrilla Eradication Program uses an integrated pest management approach to eradicate hydrilla. In 2004, the program biologists used the following eradication methods: manual removal, biological control, small scale dredging, and fluridone aquatic herbicide. In 2004, CDFA biologists also cooperated with USDA scientists to test a new experimental acetic acid treatment that has the potential to control tubers in the hydrosol.

In addition to surveying and treating for hydrilla, the Hydrilla Eradication Program monitors aquatic herbicide concentrations in water after applications in order to confirm that the beneficial use of the state's waters are protected. This monitoring is done as a CDFA policy, and also to comply with the National Pollution Discharge Elimination System (NPDES) General Permit issued by the State Water Resources Control Board. To comply with the NPDES General Permit, the Hydrilla Eradication Program monitors fluridone water concentrations in Clear Lake and in the Riverview Golf Course Ponds in Shasta County.

2004 Highlights

In **Shasta County**, two previously infested ponds in Anderson were removed from the quarantine zone, leaving only the area around the Riverview Golf Course in the quarantine

zone. The two ponds were removed because there has not been any hydrilla detected in these ponds for the past six years. Intensive surveys were conducted in 2004 by boat and canoe, and by CDFA divers, before they were removed from the quarantine zone. This represents substantial progress in the eradication of hydrilla from Shasta County. In addition, the number of hydrilla plants continues to decline at the golf course. Water monitoring results demonstrated that program activities in Shasta County did not impact the beneficial use of water outside of the golf course.

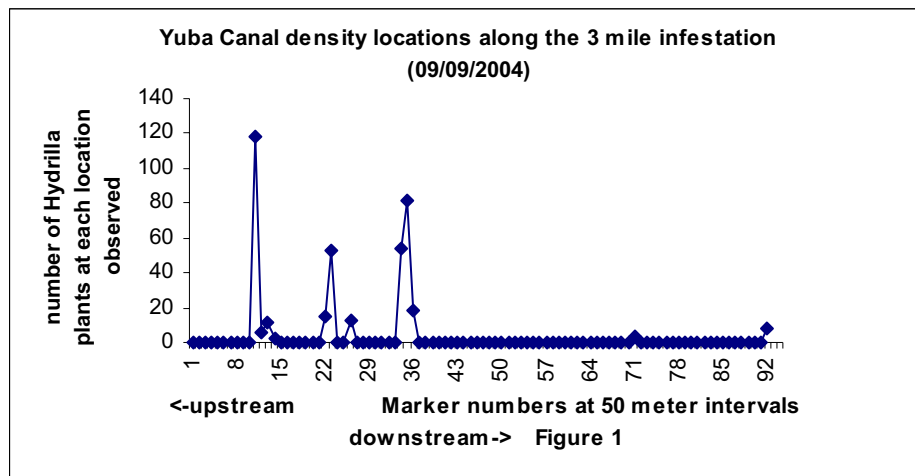
In **Lake County**, for the first year since hydrilla was detected in Clear Lake in 1994, no hydrilla was detected in Clear Lake (Table 1). Treatments continue in areas where hydrilla was detected in 2003 and previously. Though there are almost certainly tubers and small plants still in Clear Lake, this lack of detection represents an important milestone in the eradication of hydrilla from Clear Lake. In addition, the water-monitoring program showed that the aquatic herbicide applications made by the CDFA to eradicate hydrilla from Clear Lake did not, at any time, impair the beneficial use of the water from the lake.

Table 1. Level of Hydrilla Infestation in Clear Lake, Lake County by Number of Infested Management Units* and Number of Finds 2000 to 2004.

Year	2000	2001	2002	2003	2004
Number of Management Units with "Finds"	31	21	6	1	0
Number of Hydrilla "Finds"	67	41	12	1	0

In **Yuba County**, progress continues in the eradication of hydrilla from infested ponds near Oregon House and from an infested section of the Yuba County Water District Canal. Of the 14 infested ponds, three have now gone three years without a hydrilla detection. CDFA biologists dredged over 400 tubers from one of the ponds. From the canal, CDFA biologists removed over 19,000 hydrilla plants, many with tubers attached. The hydrilla infestation in the canal has been reduced to several "hotspots" (Figure 1). In 2004, CDFA biologists cooperated with scientists from the USDA-Agricultural Research Service (ARS) to test an experimental, but highly promising, acetic acid treatment to directly control hydrilla tubers in the hydrosol. The acetic acid treatment was made to several of these "hotspots." If this experimental treatment is successful, it could greatly accelerate the eradication of hydrilla from the canal.

Figure 1. Number of Hydrilla Plants along the Infested Area of the Yuba County Water District Canal.



In **Nevada County**, CDFA and Nevada County biologists, following a lead from the public, detected and confirmed hydrilla in the county for the first time ever. The infestation is in a fire control pond at a waste disposal facility near Grass Valley. CDFA and Nevada County biologists responded rapidly and an eradication plan was prepared within a few weeks. CDFA divers and USDA-ARS scientists made an initial assessment of the infestation. CDFA biologists then treated the pond with fluridone and copper aquatic herbicides, with excellent initial results.

In **Calaveras County**, there have been no hydrilla detections in all but one of the originally infested ponds and creek areas (Bear Creek) in six years. In the remaining infested ponded area in Bear Creek, only two plants were detected in 2004, down from 18 plants and five mats in 2002. In contrast, hydrilla plants continue to be detected in an isolated stock pond near Mokelumne Hill.

In **Madera and Mariposa counties**, there have been no hydrilla detections in the previously infested portion of the Chowchilla River in two years (Table 2). No hydrilla has been detected in Eastman Lake since 1993. Though recurrent drought in the area may be contributing to the results, CDFA and county biologists are hopeful that they will be able to declare eradication in this lake/river system within a few years.

Table 2. Number of Hydrilla Plants and Tubers Found and Removed from the Chowchilla River, Madera and Mariposa Counties 2000 – 2004.

Year	2000	2001	2002	2003	2004
Plants	19	5	2	0	0
Tubers	1,789	23	3	0	0

In **Tulare County**, CDFA biologists continue to survey and treat infested ponds at a private fishing resort near Springville. In the largest pond on the site, hydrilla has not been detected in three years. In addition, the hydrilla infestation has been contained to the original infested properties, and has not spread into adjacent rivers or ponds.

In **Imperial County** in 2004, the southeastern third of the previously infested area was removed from the quarantine zone. This area was never highly infested, and no hydrilla has been detected there in over 10 years. The only hydrilla detection in Imperial County in 2004 was in the Wildcat Drain. CDFA, Imperial County, and Imperial Irrigation District biologists surveyed this drain in November and are preparing an eradication plan to eliminate this last vestige of hydrilla from the county. In addition, the Imperial Irrigation District continued to produce and release the triploid grass carp in its canals for control of hydrilla and other aquatic vegetation.

In addition, hydrilla was detected during 2004 in **one commercial plant nursery** and **one aquaculture retailer**. The commercial plant nursery is in northern Los Angeles County, and the aquaculture wholesaler is in Alameda County. In each case, CDFA biologists and county department of agriculture biologists took the lead on removing all hydrilla plants and plant parts from the infested area. In the case of the wholesaler, the CDFA Pest Exclusion Branch worked with the vendor to prevent reintroductions.

In conclusion, the CDFA Hydrilla Eradication Program continues to protect California's waterways from this noxious weed. Though new infestations are being discovered, the overall population of hydrilla in the state continues to decline. Several previously infested areas were removed from quarantine zones in 2004, and project biologists predict continued success in the eradication of hydrilla from remaining infested areas.

NOXIOUS WEEDS PROGRAM

Noxious Weed Eradication project's accomplishments in 2004 were:

- 114 A-rated weed sites were treated and evaluated by program staff.
- A total of 12,453 miles of state, county and forest roads were surveyed for A-rated weeds.
- Program staff gave 40 educational, training and outreach presentations on Noxious Weed biology, identification and eradication. Over 1,250 people were in attendance at these presentations.
- Program staff attended meetings and gave presentations at all 47 Weed Management Areas in the state.

To date, Noxious Weed Eradication projects have eradicated 14 weeds from the state. These are whitestem distaff thistle, dudaim melon, giant dodder, serrate spurge, Russian salttree, blueweed, tanglehead, creeping mesquite, meadowsage, heartleaf nightshade, Austrian peaeweed, wild marigold, Syrian beancaper, and perennial sowthistle. Weeds approaching eradication at the statewide level include camelthorn, golden thistle, smooth groundcherry, and Illyrian thistle.

Noxious Weed Eradication projects are a cooperative effort between the California Department of Food and Agriculture (CDFA), the county agricultural commissioners, and weed management areas. The objective of the projects is the early detection, containment and eradication of A-rated noxious weeds.

They are authorized according to the California Food and Agricultural Code, Section 403 where it states, "The Department shall prevent the introduction and spread of ... noxious weeds." The term "noxious weed" is defined in the code, Section 5004 as "any species of plant which is, or is liable to be, detrimental or destructive and difficult to control or eradicate."

The CDFA has established, by way of policy, a noxious weeds rating system. Noxious weeds are classified as "A," "B," "C," or "Q." These ratings can be found in the following sources:

- "Pest Ratings of Noxious Weed Species and Noxious Weed Seed" (California Department of Food and Agriculture, Division of Plant Health and Pest Prevention Services, Integrated Pest Control Branch, 1220 "N" Street, Sacramento, CA 95814).
- Plant Quarantine Manual (<http://www.cdfa.ca.gov/pqm>).

The definition of an A-rated noxious weed, which are the targets of the Noxious Weed Eradication projects, is briefly described and summarized below:

"A" Eradication, quarantine or other holding action at the state-county level. Quarantine interceptions to be rejected or treated at any point in the state. Noxious weeds are rated as "A" if they are of limited distribution within the state and eradication efforts are likely to be successful.

In addition, Q-rated weeds are treated like A-rated weeds. The “Q” rating is a temporary rating pending more information.

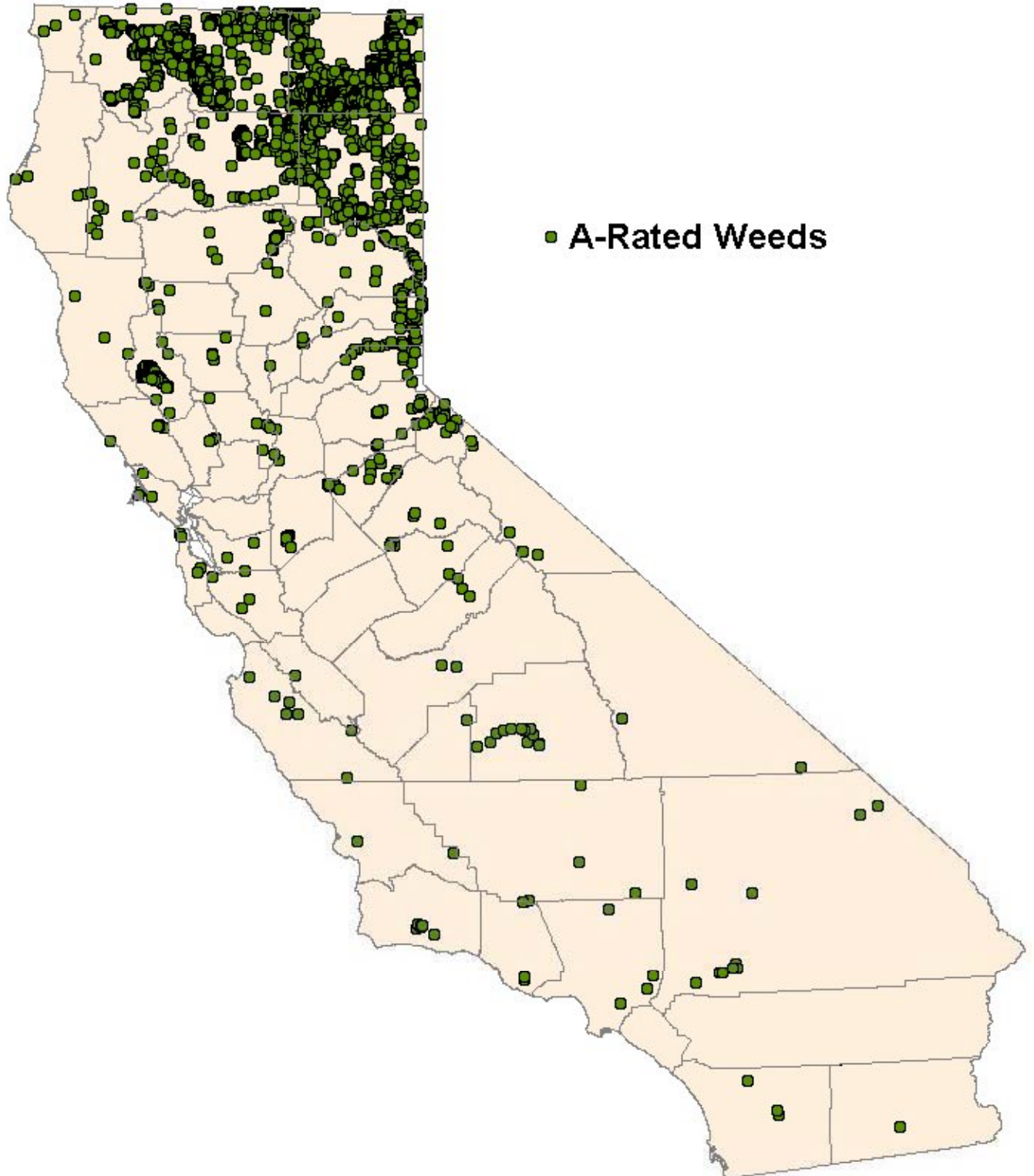
Currently, there are 22 A-rated weeds under eradication, control or containment within California. These are:

- 1) Punagrass - *Achnatherum brachychaetum*
- 2) Camelthorn - *Alhagi maurorum*
- 3) Alligatorweed - *Alternanthera philoxeroides*
- 4) Fertile capeweed - *Arctotheca calendula*
- 5) Plumeless Thistle - *Carduus acanthoides*
- 6) Musk Thistle - *Carduus nutans*
- 7) Diffuse knapweed - *Centaurea diffusa*
- 8) Iberian starthistle - *Centaurea iberica*
- 9) Spotted knapweed - *Centaurea maculosa*
- 10) Squarrose knapweed - *Centaurea squarrosa*
- 11) Skeletonweed - *Chondrilla juncea*
- 12) Yellowspine Thistle - *Cirsium ochrocentrum*
- 13) Dudaim melon - *Cucumis melo var. dudaim*
- 14) Leafy spurge - *Euphorbia esula*
- 15) Halogeton - *Halogeton glomeratus*
- 16) Dalmatian toadflax - *Linaria genistifolia* spp. *dalmatica*
- 17) Scotch Thistle - *Monopodium acanthi*
- 18) Illyrian Thistle - *Monopodium illyricum*
- 19) Taurian Thistle - *Onopordum tauricum*
- 20) Harmel - *Peganum harmala*
- 21) Wormleaf salsola - *Salsola vermiculata*
- 22) Golden Thistle - *Scolymus hispanicus*

In addition, the State of California incorporates the federal noxious weeds as state noxious weeds, by regulation (CCR, Section 3161).

The statewide distribution of current A-rated noxious weed infestations can be seen on the following map. Note that a disproportionate number of the A-rated noxious weed infestations in California are found in the four most northeastern counties (Lassen, Modoc, Shasta, and Siskiyou). This distribution probably results partially from the large amount of open rangeland in these counties and the movement of cattle from out of state. It probably also results partially from the movement of weed seed and parts on vehicles from out of state into these counties.

Figure 2. Locations of A-Rated noxious weeds in California. Each point on the map is a centroid (center locator) which may represent multiple weed populations over a large area.



The Noxious Weed Eradication project's field activities in 2004 were approximately distributed as follows:

- Fifty percent consisted of survey and detection of A-rated noxious weeds at known and historical find sites and defined "high risk" corridors of entry into the state.
- Twenty five percent consisted of eradication activities, such as physical removal, assistance to the Biological Control group in introducing and evaluating biological weed control agents, and chemical control.
- Twenty percent consisted of outreach and education to elicit the help of the public to report possible A-rated noxious weed finds.
- Five percent consisted of establishing and evaluating monitoring plots to measure the efficacy of the eradication effort and changes in A-rated noxious weed populations through time.

PINK BOLLWORM AND OTHER COTTON PESTS

Program personnel continue to utilize a risk-based management approach to maximize cost efficiencies without significantly sacrificing program detection and control objectives. The San Joaquin Valley was divided into bio-potential zones, based on climate data and native moth capture history. The program activities of sterile release, mapping, and trapping were then coordinated within each zone using the pink bollworm (PBW) heat unit model.

A grand total of 779,365 acres of cotton was mapped in California during 2004. Southern California cotton acreage totaled 32,215 acres. The four cotton-growing counties of Northern California's Sacramento Valley had a total of 8,240 acres. The PBW Program personnel mapped 738,910 acres of cotton in six counties of the San Joaquin Valley. The statewide acreage was up slightly (~11%) from the 700,055 acres mapped in 2003. Pima cotton plantings in the San Joaquin Valley for 2004 amounted to 215,635 acres, an increase of 59.9 percent from the 134,820 acres in 2003.

Early detection trapping was done at selected San Joaquin Valley sites having native PBW moth catches in the year 2003 to detect possible over-wintering populations and monitor sterile release. The early detection trapping was conducted from April 19 through July 22. General detection trapping activities were matched to the bio-potential zones. The program also utilized different trapping ratios: 1) one trap per 60 acres, 2) one trap per 80 acres, and 3) one trap per 100 acres. The starting dates for each bio-potential zone were staggered to align with the PBW heat unit model. The earliest general detection trapping began in the southern San Joaquin Valley on June 14. The total number of traps deployed during the peak of the season was 9,075 traps. Traps were inspected weekly and were removed by October 15.

A special desert trap line ran into the Mojave Desert. This trap line monitors possible PBW moth migration from the southern desert cotton-growing regions of Arizona, Mexico, Riverside, and Imperial counties into the San Joaquin Valley. Zero (0) PBW moths were detected in the Mojave Desert trap line in 2004. There was one (1) PBW moth detected in the Mojave Desert trap line in 2003, most likely a "blow-in moth", resulting from hurricane "Marty."

The PBW Identification Lab in Visalia examined 18,675 traps containing suspect moths submitted by trappers. A total of 444,986 sterile moths and 63 native moths were identified in the San Joaquin Valley traps. In 2003, 180 native moths were caught. The breakdown of moths trapped per county in 2004 was (50) native moths trapped in Kern County, four (4) in Kings County, eight (8) in Tulare County, and one (1) in Fresno County.

The sterile moth receipts from the PBW Rearing Facility in Phoenix, Arizona were consistent throughout the entire release period, with slightly heavier numbers in the beginning of the season. There was an average of 3,756,000 sterile moths released per day. Approximately 492,101,766 sterile moths, roughly five tons of moths, were released in the San Joaquin Valley.

On September 21, 2004, a reduced tillage permit was issued by California Department of Food and Agriculture (CDFA) to the PBW regulated districts in the San Joaquin Valley. The permit had several key requirements including grower notification to the local County Agricultural Commissioner, post harvest cotton plant shredding, tillage sufficient to prevent plant regrowth, regulatory inspection of cotton fields, and substantial prohibited or restricted areas based on PBW native finds. The most significant change was not requiring that roots, plant stubs, shredding debris and trash remaining from harvesting or clean-up operations be mixed with surface soil. This annual permit expires December 31, 2004.

Cotton plowdown regulation variances were issued to nearly all cotton-growing regions due to heavy rainfall throughout the state. These variances were extensions only and all other provisions of the plowdown regulations remained in effect.

Pink Bollworm Rearing Facility Methods Development Trials

The CDFA staff and Phoenix Rearing Facility personnel conducted two field trials. One trial was conducted to measure any benefits gained by reducing handling of sterile moths. This trial assessed the use of a sterile release "top box" modified into a shipping container so it could be directly loaded into the release aircraft at destination. Sterile moth mortality and trap recapture was measured. A 2X recapture rate was observed above the standard shipping procedure. In the other trial, sterile moth mating propensity (under field conditions using a genetically selected "orange eyed" sterile moth) was assessed. Trap recapture data is still being analyzed.

Bt Resistance Monitoring

The PBW Program personnel conducted trapping and boll collection in the cotton-growing areas of Southern California. Cooperating with the United States Department of Agriculture (USDA), the Arizona Cotton Research and Protection Council, and the University of Arizona, PBW Program staff conducted trapping and boll survey designed to evaluate PBW resistance to *Bt* cotton. Monitoring was done in Riverside and Imperial counties. To date, no resistance has been observed.

Silverleaf Whitefly Monitoring

Cotton fields were monitored for the seasonal abundance and distribution of Silverleaf whitefly (SLWF) in the San Joaquin Valley. Data was summarized in bi-weekly reports and provided to USDA, agricultural commissioners, and University of California, Cooperative Extension. Warmer than normal fall temperatures provided ideal conditions for SLWF and a slight rise in overall late season populations was observed. The overall percentage of sites infested with

SLWF was 73.5 percent, up from 63.1 percent in 2003. The presence of honeydew on leaves dropped from 35.8 percent in 2003 to 26.5 percent in 2004.

Cotton Boll Weevil

Since November 19, 1990, no boll weevils, *Anthonomus grandis*, have been trapped in California. The declaration of eradication of boll weevil was issued December 1993. Program efforts continue to help keep the state free of boll weevil. Traps are deployed in Southern California cotton-growing areas to detect any new boll weevil infestations. The Imperial County Agricultural Commissioner, under contract with the CDFA, monitors boll weevil traps year round along the borders of Arizona and Mexico. No cotton boll weevils were detected in California.

Purple Loosestrife Control Project

Key accomplishments for 2004 were:

- Staff discovered seven new infestations bringing the state's total to 93.
- Leaf-eating exotic beetles are beginning to have measurable impact on the plant in Shasta County.

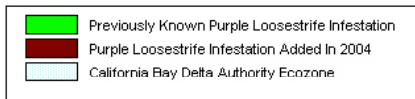
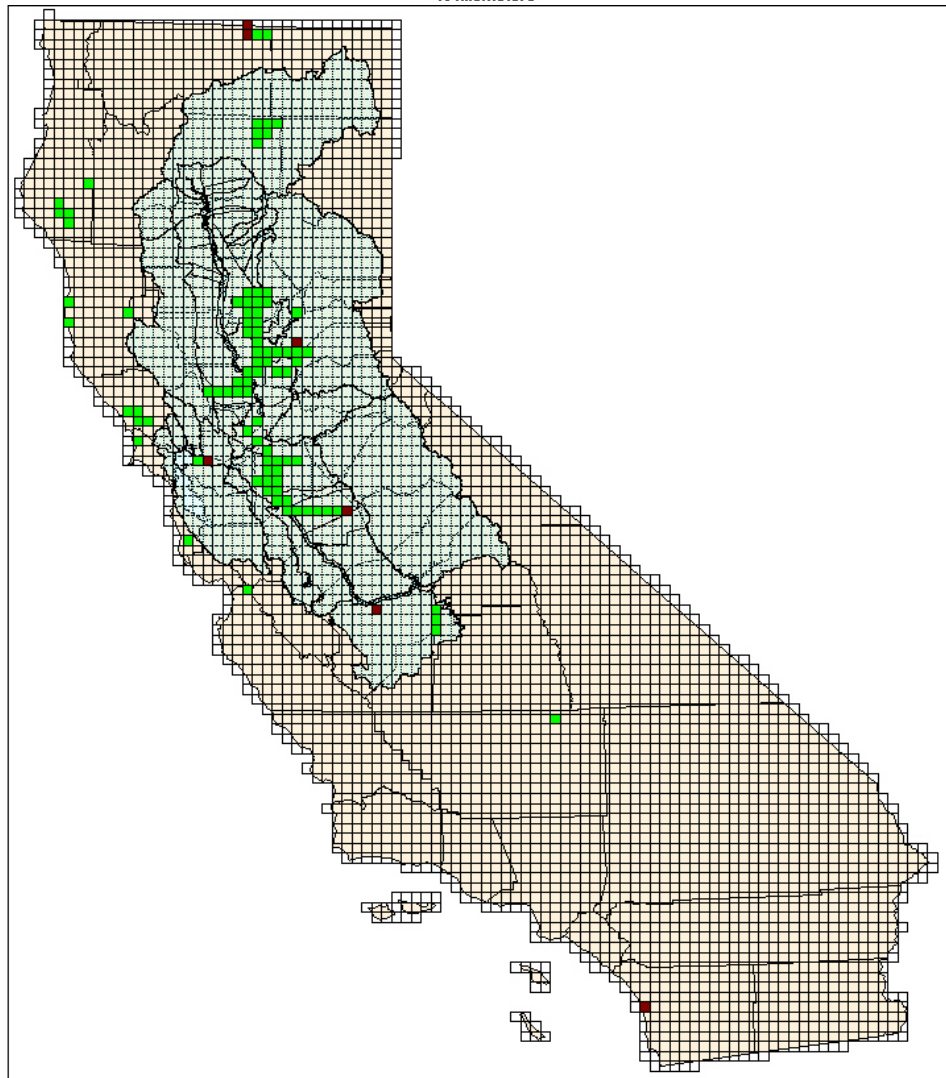
The Purple Loosestrife Control Project (PLCP) continued to survey and control purple loosestrife in the state in 2004. The PLCP is really two projects, the first to detect, contain, and control purple loosestrife in the Sacramento/San Joaquin Delta and associated waterways, and the second to detect, contain, and control purple loosestrife in Humboldt, Kern, Mendocino, San Mateo, Siskiyou, and Sonoma counties. The first project is funded by the California Bay Delta Authority and the second by the National Fish and Wildlife Service Pulling Together Initiative. The PLCP is operated by the California Department of Food and Agriculture (CDFA), but with the cooperation and support of the county agricultural commissioners, the local Weed Management Areas, the United States Fish and Wildlife Service, the United States Department of Agriculture-Agricultural Research Service, the University of California, Davis, the California Department of Boating and Waterways, the California Department of Fish and Game, and California State Parks.

Though beautiful in appearance, purple loosestrife is a noxious, riparian weed that invades native riparian communities and replaces the native vegetation, eventually forming monocultures. Purple loosestrife monocultures do not support native fish and wildlife resources, can overtake habitat for threatened and endangered plants, fish and wildlife, and can affect water flow and quality. For these reasons, the CDFA ranks purple loosestrife as a B-rated noxious weed.

Figure 1. Purple Loosestrife Infestations Detected by the PLCP in 2004. (Sites detected in 2004 are in magenta; sites detected in 2000-2003 are in green).

California Department of Food and Agriculture Purple Loosestrife Control Project, 2004

□ = 10 kilometers



In 2004, the CDFA biologists identified seven new purple loosestrife sites in the state. This brings the total of known infested sites to 93, as compared to only one known site (White Slough) when the PLCP began in 2000 (Figure 1). (A site is defined as positive purple loosestrife identification in a 10 by 10 kilometer grid that the project has established over the state for mapping and reporting purposes).

Approximately 90 percent of all known sites in the Delta were treated with one or more control methods. Control methods include release of biological control agents, principally the leaf eating beetle (*Galerucella* species), manual removal, seed head clipping, or chemical sprays

with glyphosate herbicide. The biological control agents have been released by the CDFA in California since 1997 but only started to give meaningful purple loosestrife control in 2004 (Figure 2).

Figure 2. Purple Loosestrife control by the leaf-eating beetle, Shasta County. Left image was taken in August 2002; note purple loosestrife in flower, right image was taken in August 2004.



The PLCP also continued to survey and control purple loosestrife in Humboldt, Kern, Mendocino, San Mateo, Siskiyou, and Sonoma counties. In Humboldt County, the CDFA has supported the Humboldt County Department of Agriculture in preparing an Environmental Impact Report to control purple loosestrife along the Eel River. In Kern County, the CDFA contracted with the Audubon Kern River Preserve to control purple loosestrife near Onyx, continuing a contract in place since 2001. The CDFA continued to survey for purple loosestrife in Mendocino and Sonoma counties, control a known infestation in San Mateo County, and survey and release biological control agents in Siskiyou County.

In addition, in 2004, the CDFA cooperated with the California Department of Boating and Waterways and the Center for Spatial Technologies and Remote Sensing (CSTARS) at the University of California, Davis to develop hyperspectral analysis for the remote sensing of purple loosestrife in the Delta. The CDFA provided CSTARS with maps of known purple loosestrife infestations and supported on the ground activities in June 2004. The remote sensing was done by aircraft in July 2004, and the data is still in analysis.

In conclusion, the CDFA PLCP continues to protect California's waterways from purple loosestrife invasion. The PLCP continues to discover new infestations and treat known infestations. The CDFA is very encouraged by the success of the biological control agent for long-term control of this noxious weed.

VERTEBRATE PEST CONTROL

The key accomplishments for 2004 include:

- Obtained a special local need registration for zinc phosphide against voles in alfalfa.
- Registered a new wax bait block containing diphacinone.
- Received approval for the use of an alternative dye identification product and a new dispersant to improve rodenticide efficacy.

The primary objectives of the Vertebrate Pest Control Program are to maintain the California Department of Food and Agriculture's (CDFA) field-use rodenticide registrations and to administer the Vertebrate Pest Control Research Program. The agricultural community and other stakeholders utilize the CDFA's rodenticides in order to prevent and control vertebrate pest damage to agricultural commodities, agricultural infrastructure, and water control and conveyance structures and to protect the public health and safety.

The rodenticide registrations are currently in the United States Environmental Protection Agency's (USEPA) Reregistration Eligibility Decision (RED) process. In evaluating pesticides for reregistration, the USEPA obtains and reviews a complete set of studies from pesticide producers, describing the human health and environmental effects of each pesticide. The USEPA then develops any mitigation measures or regulatory controls necessary to effectively reduce each pesticide's risks. The USEPA reregisters pesticides that can be used without posing unreasonable risks to human health or the environment. The CDFA's rodenticide registrations are currently in complete compliance with the RED requirements and timelines.

In order to address issues outlined in the RED, the Vertebrate Pest Control Research Program funds studies to investigate experimental application strategies to improve rodenticide efficacy, non-target hazard studies to reduce the potential hazard of secondary poisoning to non-target species, and product chemistry and residue data to support the expanded use of rodenticides on food crops. Since 1991, the Vertebrate Pest Control Research Program has funded 83 research projects on efficacy, product chemistry, crop residues, and non-target hazards, totaling \$5.3 million to support reregistration and to expand the uses of the CDFA's rodenticides.

The following highlights program progress in 2004:

Endangered Species Petition: California Tiger Salamander

A number of environmental advocacy groups submitted a petition to list the California Tiger Salamander (*Ambystoma californiense*) as an endangered or threatened species in California was filed with the California Fish and Game Commission (CFGC). The Vertebrate Pest Control Program submitted comments to the California Department of Fish and Game (CDFG) in opposition to the petitioner's claims of imminent danger and the science supporting the proposed listing. On December 2, 2004, the CFGC held a hearing on the petition to list the California Tiger Salamander under the California Endangered Species Act and to make a final decision on the petition. The CFGC determined that the species does not warrant listing.

USEPA Reregistration of Rodenticides

The USEPA has determined that the CDFA's rodenticide registrations are in compliance with all current re-registration requirements and expect to finalize the re-registration process during 2005 and issue new rodenticide labels to the CDFA. The CDFA will provide registration information and materials to counties that manufacture and distribute rodenticide baits as well as counties that sell rodenticide baits as soon as the re-registration process is complete.

USEPA Ecological Risk Assessment for Rodenticides

In December of 2004, the CDFA submitted extensive comments on the USEPA's "Revised Comparative Ecological Risk Assessment for Rodenticides and Benefits Analysis." The risk assessment will be used to determine if unacceptable risks are associated with agricultural rodenticide use and if mitigation measures are warranted.

USEPA Registration Issues

During January 2004, a 24(c) Special Local Need registration was issued for the use of zinc phosphide on alfalfa to control voles in California. The CDFA had previously submitted a petition for tolerance request to establish a permanent food residue tolerance for zinc phosphide on alfalfa.

On December 8, 2004, the CDFA received approval for the registration of a new wax bait block containing diphacinone for control of rats and mice on agricultural premises.

During 2004, the CDFA received approval for a series of rodenticide product formulation amendments, including an alternative dye for product identification and enforcement purposes and a new dispersant to improve efficacy.

County Bait Manufacturing Compliance Agreements

During 2004, compliance agreements between the CDFA, and eight county agricultural commissioners that formulate rodenticide baits on behalf of CDFA were finalized. The compliance agreements specify conditions of manufacture and are part of an overall Quality Assurance/Quality Control program CDFA has implemented.

Vertebrate Pest Control Research Advisory Committee

The Vertebrate Pest Control Research Advisory Committee held two meetings in 2004, the first was held on April 21, 2004 at the Stanislaus County Agricultural Center and the second on October 13, at the Alameda County Agricultural Center.

The following research proposals were recommended for funding, approved by the Secretary of CDFA, and initiated in 2004:

1. "Ground Squirrel Underground Baiting Strategies," Dr. Terrell Salmon, University of California, Cooperative Extension, San Diego County.

2. "Cottontail Rabbit Control," Cheryl Wilen, University of California Cooperative Extension, San Diego County.
3. "Evaluation of Baiting Duration and Bait Station Density for Deer Mouse Control in Almonds," Dr. Terrell Salmon, University of California Cooperative Extension, San Diego County.
4. "Tetracycline as a Synergist in Diphacinone Baits to Increase Efficacy, Reduce Residues and/or Lower Potential Secondary Hazards," Dr. Thomas Primus and Dr. John Johnston, United States Department of Agriculture, Wildlife Services, National Wildlife Research Center.
5. "Development of a DNA Based Procedure for Efficient and Selective Removal of Predatory Coyotes Using the Coyote Lure Operative Device," Dr. John Johnston, United States Department of Agriculture, Wildlife Services, National Wildlife Research Center.
6. "Development of a Natural Predator Control Toxicant," Dr. John Johnston, United States Department of Agriculture, Wildlife Services, National Wildlife Research Center.
7. "Evaluation and Adoption of Industrial Hygiene Practices by the California Department of Food and Agriculture's Bait Mixing Facilities," Dr. Terrell Salmon, University of California, Davis.
8. "Phosphine Exposure to Applicators and Other Handlers Associated with Application of Zinc Phosphide Artichoke Bract Bait for Meadow Vole Control in Artichoke Fields," Dr. Terrell Salmon, University of California, Davis.
9. "Field Evaluation of the Coyote Lure Operative Device," Dr. Robert Schmidt, Utah.

WEED MANAGEMENT AREAS

The following highlights program progress in 2004:

- Over \$1,155,000 was distributed to 36 Weed Management Areas (WMAs) in 2004, resulting in over 15,515 acres of high priority weed infestations treated under this program. Most sites had close to 90 percent control. Additionally, at over 468 sites, 100 percent of targeted weeds were eradicated from the site and they are not expected to return.
- This state seed money has been matched locally by a total of \$2,107,342 of “in-kind” resources (donated equipment or services) and matching cash dollars. Of these resources, \$462,819 is direct cash matches by county government and outside grants.
- The number of countywide WMAs in California has grown from seven in early 1998 to 48 in 2004. The groups represent 57 out of 58 counties in the state.
- Over 1,587 individuals attended regular WMA meetings throughout California in 2004. New local partnerships have been created among public agencies, private landowners, agriculturalists and conservationists.
- An estimated 77,688 landowners and citizens have participated in noxious and invasive weed education events statewide.
- On September 27 and 28, 2004, 75 WMA members attended the sixth Annual Statewide WMA Meeting in Woodland, California for training, exchange of information, to hear panels on WMA success stories, and to network with WMAs throughout the state.

The mission of the WMA initiative is to demonstrate the power of local cooperative action in:

- Eradicating and controlling weeds in an integrated, strategic and prioritized fashion;
- Stopping the spread of noxious and invasive weeds on public and private lands; and
- Educating people at all levels about the need and opportunities to control weeds.

The WMAs are local working groups that bring together interested landowners, land managers (private, city, county, state, and federal), special districts, and the public for the purpose of combining their actions and expertise to deal with common noxious weed control problems. This organizational concept originated with the federal government in the Greater Yellowstone region, resulting in increased weed control across the boundaries of three states. This type of collaborative weed control is widely recognized as an ideal way to implement weed management programs locally.

California Governor Gray Davis signed legislation (Assembly Bill 1168, Frusetta and Senate Bill 1740, Leslie) providing the CDFG sufficient funding to develop pilot weed management programs (through local WMAs) in several counties. Assembly Bill 1168 (Chapter 961, Statutes of 1999) was adopted in 1999. It established a Noxious Weed Management Account in the CDFG, allocating \$200,000 for each of three years to support work by WMAs. Senate Bill 1740,

adopted in 2000, added \$5,000,000 to the Noxious Weed Management Account and extended the time over which funding will be available to WMAs throughout the state.

PLANT PEST DIAGNOSTICS BRANCH

The primary mission of the Plant Pest Diagnostics Center (PPDC) is to provide timely and accurate plant pest diagnostics in support of the pest prevention system for the California Department of Food and Agriculture (CDFA). The branch also serves as a scientific resource and provides professional expertise to a number of clients including CDFA, the United States Department of Agriculture, other federal and state agencies, county agricultural commissioners, the University of California Cooperative Extension, the agriculture industry, and the public. Our scientists, technicians and support staff strive to provide excellence in service and leadership in plant pest diagnostics and biosystematics.

This annual report is a summary of accomplishments of the past year. It provides updates on projects and highlights critical areas of research and new methodology in diagnostics but is by no means inclusive of all work performed at the PPDC.

2004 Sample Workload

The number of diagnostic samples processed in 2004 at PPDC includes:

Botany	1,008
Entomology	45,000 (estimate)
Nematology	3,874
Seed Sciences	6,923
Plant Pathology	109,398 (includes samples from Phytosanitary Quarantine program, seed health testing, and special projects such as Sudden Oak Death, Plum Pox, Nursery Stock Virus Certification, Pierce's Disease, and Karnal Bunt.)

These sample numbers are in no way representative of the actual amount of time or labor required to complete any given sample nor can sample numbers be compared among the different disciplines (labs) as a measure of workload. Note for example, that the number of Botany or Seed samples does not reflect the number of actual identifications made for a given sample in these labs. It is common for a single plant or seed sample to require multiple identifications of all the material in a sample. Thus a more accurate representation of the true workload for Botany and the Seed Laboratory would be several times these numbers. In a similar way, sample numbers alone do not differentiate between an insect identification that is an immediate recognition and identification from one requiring lengthy study, possibly collaboration with other experts, or even a new published description. Likewise, sample numbers of plant pathology do not differentiate from those requiring only a simple, quick serological test, from a sample requiring days to weeks of culturing, microscopy, greenhouse testing, etc. in order to arrive at a diagnosis. Of course, the same line of reasoning is true for Nematology samples as well.

Research

The scientists at PPDC continue to do research and publish scientific papers as part of the mission of this branch. In the past year, 55 scientific papers were published. In addition,

numerous formal scientific presentations are given throughout the year by many of the staff to scientific peers, government agencies, and industry.

Seminar Series

The Plant Pest Diagnostics Center started a seminar series to enable scientists to present research data and discuss ongoing research and pest issues of general importance. The focus of the seminar is to share information on any aspect of basic or applied research or diagnostic responsibilities and includes invited speakers from other institutions. Dr. Shaun Winterton, Associate Insect Biosystematist, is coordinating the Seminar series.